Rethinking Academic Culture in the Information Age

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ABSTRACT

The integration of new technologies in higher education has provoked a strong response over the last decade, not only from administrators and the public but also from academics. It has re-opened basic theoretical questions about the role of universities and that of academic culture.

This thesis begins with a critical review of the literature dealing with conceptualizations of academic culture and technology in higher education. Most theorists have come to the conclusion that academic culture is a set of values and norms that serve as guides for action. At root, this conclusion is derived from an organizational perspective prevalent in contemporary academic culture theory.

I argue, instead, that academic culture needs to be re-addressed to consider the complexities between its traditional boundaries and new technological pressures. My research suggests there are high levels of contestation across the full range of technologies, and that the nature of this contestation is ideological, aesthetic, and pedagogical. Furthermore, the contestation is both a product of, and is productive of, a reshaping of academic culture.

Drawing on the theory of cultural production of Pierre Bourdieu, who views culture as constitutive of fairly engrained practices I demonstrate that academic culture stands as a check on institutional powers, yet it is also influenced by the integration of new technologies. This suggests that academic culture is formed and maintained by an ever-negotiated and shifting set of activities.

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Au cours des dernières années, l'intégration de nouvelles technologies dans l'éducation supérieure a provoqué plusieurs réponses virulentes, non seulement chez les administrateurs et le public, mais aussi chez les académiciens. Mais quel que soit la réaction du public ou des experts, l'intégration des technologies semble nous obliger à retourner à la problématique du rôle des universités et de celui de la culture académique.

Dans un premier temps, nous analysons la littérature théorique traitant des conceptualisations de culture académique et de technologie dans l'éducation supérieur. La plupart des ces auteurs tirent la conclusion que la culture académique est une ensemble de valeurs et de normes qui servent de guides à l'action. Cette conclusion est souvent basée sur une perspective d'organisation très répandue dans les études contemporaines de la culture académique.

Dans un deuxième temps, je propose, par contre, qu'il faut repenser la problématique complexe entre les frontières traditionnelles de la culture académique et nouvelles pressions technologiques. Je démontre qu'il y a les niveaux élevés de contestation sur toute la gamme des technologies, et que la nature de cette contestation est idéologique, esthétique, et pédagogique. De plus, cette contestation est un produit de, et est productif

d'un remodelage de la culture académique.

Basé sur la théorie de la production de culture de Pierre Bourdieu, qui voit la culture étant constitutive de pratiques plutôt enracinés, je démontre que la culture académique se tient comme modérateur des pouvoirs institutionnels , pourtant elle est également influencée par l'intégration de nouvelles technologies. Ceci suggère que la culture académique soit formée et maintenue par un ensemble d'activités négociées et changeantes.

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This thesis is dedicated to my mother, Palmira de Jesus Alves Moutinho.

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Chapter 1
Academic Culture: Exploring the Boundaries

> *The Mission of McGill University is the advancement of learning through teaching, scholarship and service to society: by offering to outstanding undergraduate and graduate students the best education available; by carrying out scholarly activities judged to be excellent when measured against the highest international standards; and by providing service to society in those ways for which we are well-suited by virtue of our academic strengths. The primary functions of the University are education, research, and dissemination and creation of knowledge* (McGill University mission statement, 2005).

> *...le monde c'est considérablement globalisé et le savoir occupe aujourd'hui une place capitale dans le développement et la croissance des sociétés. Dans ce contexte, l'université est appelée à jouer un rôle social déterminant, beaucoup plus important que celui qu'elle avait par le passé. Ce rôle ne consiste pas seulement à former les nouvelles générations, à faire avancer tous les champs du savoir, à transférer et à valoriser les connaissances nouvelles, mais aussi à être un lieu de réflexion critique sur les grands enjeux sociétaux. Le nouveau monde dans lequel nous vivons ne pourra se développer que si nos sociétés réussissent à combiner harmonieusement science, technique et humanisme et à donner un visage humain à la globalisation et à l'économie du savoir* (Déclaration annuelle du recteur de l'Université de Montréal, M. Robert Lacroix).

Introduction

Over the last two decades the boundaries of academic culture have been challenged and extended on various fronts. Notably, the encroachment of corporate partnership within the academy and maintaining pace with rapidly changing technologies. Indeed, one of the most significant factors to impact academic culture in the last decade has been the implementation of communication and information technologies within universities. The increased reliance on computer technologies for the production of knowledge has become an integral aspect of the postmodern condition. Jean-Francois Lyotard coined the term

"postmodernism" in a 1979 report on the state of knowledge to the higher education council of Quebec (Lyotard, 1983). In an addendum to this influential report entitled *The Postmodern Condition: A Report on Knowledge*, Lyotard answers the question "what is postmodernism?" by declaring "a work can become modern only if it is first postmodern. Postmodernism thus understood is not modernism at its end but in the nascent state, and this state is constant" (p. 79). Two pages later he expands on this statement in a passage, which retains a certain doxological authority:

> The postmodern would be that which...denies itself the solace of good forms, the consensus of a taste which would make it possible to share collectively the nostalgia for the unattainable; that which searches for new presentations, not in order to enjoy them but in order to impart a stronger sense of the unpresentable. A postmodern artist or writer is in the position of a philosopher: the text he writes, the work he produces are not in principle governed by pre-established rules, and they cannot be judged according to a determining judgment, by applying familiar categories to the text or to the work...

In addition to Lyotard's doubts concerning the master narratives of modernism, the postmodern condition asserts a series of basic connections between technological development and the further extension of capitalist principles into cultural production and exchange. The key argument being that, the computerization of society is accompanied by a new stage in the commodification of knowledge. In this way, the postmodern condition provides the socio-historical context in which academic culture negotiates the implementation of new technologies.

The rules of technological application in capitalist society, argues Lyotard, enforce a game of efficiency. According to Lyotard (1984), a way to describe contemporary science in the wake of the loss of an absolute foundation, is what he calls "performativity," or the principle of optimizing performance by technological innovation

(pp. 44-46). Given the increasing complexity of empirical demonstration and proof, the principle of experimental replication has become increasingly dependent on sophisticated technology that costs money. This results in a situation where those scientists who can maximize output (proof) while minimizing input expended in the process of proof (energy, and therefore cost) get funded (although he acknowledges that there are exceptions).

Lyotard claims that this game has demoralized research scientists and forced the university into a subordinate, functional role in the social system (1984: xxiv). He also alleges that the principle of optimal performance affects not only the pursuit of knowledge but also the nature of its transmission. Higher education has become increasingly defined by its capacity to create and produce skills indispensable to competition in world markets and the efficient maintenance of internal social cohesion (p. 48). The goal of learning becomes problem-solving in the "here-and-now" and developing skills at organizing data "into an efficient strategy" (p. 53). Performativity follows a systems theory logic: whatever course of action increases the overall efficiency of the social system is legitimized, without decisive regard for its effects on human beings (pp. 62-63). For Lyotard, this situation entails the demise of the professor, because under the performativity principle, "a professor is no more competent than memory bank networks in transmitting established knowledge" (p. 53).

Lyotard took a cynical view of higher education as a member of a university that had been commissioned by De Gaulle to placate the '68ers', academic radicals who demanded more open admissions to elite institutions. Critical intelligentsia are not capable of revolutionary leadership because in capitalist societies the state resumes its

regulatory role. At best, the university is a catalyst for social change when its two functions engaged in mutual regulation: teaching curbed the esoteric tendencies of research, while research disrupted the routinising tendencies of teaching. However, their balance is in danger of being lost as teaching becomes a dispensation of credentials and research is being privatized as intellectual property – one driven by the employment market, the other by the future market. A clear sign of the university's retreat from its public mission is what Lyotard identified as the 'meta' or 'grand-narratives' in academic discourse.

Lyotard considers two meta narratives. One, the metanarrative of emancipation, which tells the story of "the people's" liberation through the accumulation and circulation of scientific knowledge. The other, the metanarrative of totalization, which tells the story of the ultimate unification of all scientific knowledge in the speculative Hegelian spirit. Postmodern incredulity towards these metanarratives results in a "delegitimation" of science. This creates a vacuum where two new forms of legitimation emerge. One is, as we have seen above, performativity, efficiency as measured by the ratio of input to output, which transforms science in a knowledge industry; the other, Lyotard's preference, eschews metanarrative but reasserts "little narratives" within a scientific knowledge which is discontinuous, paradoxical, and only locally determined. In Lyotard's (1984) terms, there is no all-encompassing language game for science (pp. 41-43). For Lyotard, this realization means that the sciences are a plurality of incommensurable and discrete "truths" and their object, reality, is essentially unpredictable and unstable (p. 57). Therefore, all we can know are local contexts or "islands of determinism" rather than a complete, consistent whole (p. 59). In the

postmodern condition, the university is in impending disintegration being pulled apart by alternative pursuits that effectively disaggregate its teaching from its research function.

The postmodern condition, then, marks the disintegration of the university. Traditionally, the university had means to check such tendencies toward self-absorption. The most mundane was a common pool of financial resources from which the various departments would draw their operating budgets. With the emergence and active encouragement of privately funded income, the university's finance committee is losing its significance as a forum for discussions of the costs and benefits of pursuing alternative lines of inquiry. The other traditional check is the students. Curriculum planning remains a revealing exercise for evaluating the relative importance of bodies of knowledge and modes of thought. This is a source of leverage that intellectuals can exert over knowledge systems.

Lyotard's postmodern cynicism has been vindicated by an unseemly alliance between academia's classical ethic of autonomous inquiry and the increased disciplinisation of the scaled-up modern university. Originally, most academics believed that they were engaged in autonomous inquiry, which was driven by some overarching ideal – the truth. The university provided the institutional space that made free-range inquiry possible.

The postmodern narrative posture celebrates the endless proliferation of inquiries and condemns the submission of the "information explosion" to the institutional containment of the university, which presupposes a clearly bounded "universe of discourse" that is traversed in a "curriculum". Lyotard challenged the last bastion of medievalism in the modern university, namely the idea that everything worth saying can

be confined to its walls. Lyotard's disparaging of the structural power of the university was a piece of the neo-liberal tendency for unimpeded innovation. Lyotard reduces the university from a transcendental concept to a cluster of buildings where representations of those discourses have chance encounters and set up temporary alliances, subject to the structures of the administrators. Lyotard reflects the same set of developments associated with highly productive capitalist economies married to welfare state systems. An analysis of academic culture cannot occur in isolation from these underlying dynamics of capitalist culture.

In this way, the shift occurring in academic culture, articulated in this thesis, predates some of the technologies examined here. It begins with a loss of autonomy, disaggregation of teaching from research, deligitimation of science, the devolution of the welfare state, and a (the university) retreating from the public mission. Thus contextualized, academics' perceptions of new technologies are the concretization of these discourses of disenchantment. Although universities have always used technologies, the new computer technologies are quite different in nature and scope. The differences between new and previous technologies (typewriter, overhead projector) do not have as much to do with the technologies themselves but with the pace at which they are being implemented, and how relentlessly they are being encouraged by administrations (and by society at large, as the above context indicates). No previous technologies (non-computerized) have prompted such a strong reaction from governments and institutional administrations. Although information and communication technologies have provided great tools to academics, their adoption has not been seamless and the resulting impact on academic culture has been complex. This study is an

exploration of how academic culture is negotiating the increased implementation of information and communication technologies and how those academics studied perceive the integration of technologies in their practices of teaching, learning, publishing and research. In doing so, I focus on the important, yet often neglected, cultural response to using technologies within the university.

In this chapter, I first summarize the literature on academic culture and on technological integration in university education as it relates to academic culture. Second, I explain the theoretical approaches taken in the project. Lastly, I describe the methodology that frames the study.

Academic culture

Before understanding the ways in which academic culture is developing a complex relationship with the institutional implementation of technologies in university education, I delve into a description of existing conceptualizations that inform my deployment of academic culture as a concept. The concept of culture has been defined in many disciplines, most notably in sociology and anthropology, and definitions vary considerably, specifically with reference to the culture of academics (Clark, 1983, 1987, Tierney, 1988, 1990, Bergquist, 1992, Austin, 1991, Becher, 1981, 1987, 1989, 1994).

The appearance of research on higher education and culture in the 1970s and 1980s coincided with a general interest of social scientists in the culture of organizations in terms of reactions to organizational change and innovation. The concept of organizational culture has been recognized as a critical element in the study of higher education institutions and how their members respond to innovation. This critical element

consists of a focus on the non-rational or symbolic side of organizational life.

The work of Burton Clark (1970, 1983, 1987) on 'organizational saga' provides an understanding of academic culture as a collective understanding of unique accomplishments in a formally established group (1983). On the basis of his analysis of developments in three United States colleges, he suggests that under specific circumstances, in particular organizations, 'organizational saga' can develop. The building of this saga consists of an initiation and a fulfilment stage. The settings for the initiation are a new and autonomous organization, an established organization in crisis, or an established organization in a stage of readiness for evolutionary change. With respect to the fulfilment of sagas for each type of organization a number of components can be categorized that are at the core of its development. Regarding the colleges in Clark's study the organizational saga is built through the following components: the personnel, the program, the social base, the student subculture, and the imagery of the saga (1983). Clark suggests, however, that in large, multidisciplinary institutions an organizational saga can only be introduced through a decentralization process, acknowledging that the saga of autonomous units might come into conflict with the saga of the institution as a whole (1983:85), thus suggesting that within academia there are competing 'sagas' or cultures. Clark points to the integrating role that organizational saga can play in mono disciplines or in parts of a larger institution, but not for the institution as a whole.

Clark has used his analysis of organizational saga in his subsequent research to conceptualize the basic elements of organization in higher education. The social institutional contexts that are argued to affect the culture of academics are, according to Clark (1983:74-75) and also Austin (1991): the discipline, the higher education

institution, the national system, and the academic profession at large. Each of these contexts affects the beliefs of academics.

First, there is the impact of the discipline. The strongest influence of the discipline, according to Clark, can be observed in the socialization process of new members to a field. They are inducted into a special way of life and they "enter different cultural houses, there to share beliefs about theory, methodology, techniques and problems" (1983:761). Part of the socialization process is the introduction of new members to the disciplinary jargon. Another aspect mentioned by Clark is the "steady flow of symbolic materials about themselves" generated in each disciplinary association, learned society and academies. In general, these materials produce a powerful self-identity (1983:80).

Second, there is the impact of the institution. The institution, Clark argues, plays an important role in defining and organizing the work and life of academics. For example, professors are only professors if they are employed by colleges and universities. The factors that contribute to the influence of the institution are: its mission and purpose, size, location, complexity and student body. The author suggests that institutions of a similar type often have similar impacts.

Third, Clark asserts that, "certain academic beliefs have their principle source of attachment in the national system as a whole" (1983:95). Each national higher education system has unique distinguishable characteristics, having to do with structure and organization, with history and tradition, and with national goals and policies. Regarding the latter, Clark mentions some of the policy issues that affect the character of any system: how accessible should higher education be; how specialized should the teaching

programs be; to what occupations should higher education connect; and what should be the position of research in the system.

Fourth, both Clark and Austin highlight the influence of the academic profession at large, overlapping with the discipline. It may be helpful here to highlight the work of Walter Metzger who makes a distinction between academic freedom and scientific freedom (1987). The former refers to the ideology of being an individual professor. This ideology crosses all disciplines in the common circumstances of an academic appointment in a college or university (1987), while scientific freedom has to do with the restraints on work in a discipline whether inside or outside a higher education system. In addition to academic freedom, various professional elements can be expected to have an impact on the academic culture. According to Austin these include: intellectual honesty, integrity, fairness, the notion of community and the assumption that the main purpose of the academic work is to work with and produce knowledge (1991).

Clark's work further clarifies how the social institutional contexts operate as vehicles of change with respect to academic culture. Academic change processes, including changes in academic culture are argued to be conditioned by the structural forms that are in place. Changes in these structural forms can be expected to affect academic processes, as well as academic values and beliefs. Clark relates three institutional contexts to the main structural levels in higher education: the superstructure, the understructure and the middle structure.

The first is composed of the structural links "keeping a system together" that relate the otherwise fragmentary higher education institutions and disciplines to one another. These links can be identified with the social institutional context called the

national system. This refers to the administrative and legal rules and prescriptions that determine the nature of the links between the institutions. As indicated these have to do with student access, the position of research within the system, and the relationship between higher education and the labour market.

The understructure is driven by professional forms. This is the level where many formal and informal units are located that house the members of the academic profession. Theses units are "typically dominated by personal, collegial, and oligarchic arrangements that academics themselves have constructed for use in such crucial activities as research, teaching, hiring personnel and evaluating students" (Clark, 1983:206). According to Clark, as a consequence of the disciplinary and professional pressures, the understructure is constantly moving in the direction of disintegration, fragmentation, and differentiation. At this level changes are "propelled and carried by professional modes of linkage and authority, with the changing emphases, styles, and standards of each field at large...exerting steady pressure for adaptation" (Clark, 1983:207).

The middle structure mediates between the other two and its role and function depends on the division of authority between the under and the superstructure. In systems where there is only a minimal central coordinating function, the middle structure will assume a larger part of the responsibilities. In that case, the members of the central administration of a university can be characterized as the leaders of almost autonomous 'enterprises'. Their activities "on behalf of the welfare of individual institutions leads toward a market-like interaction in which competition is the catalyst for change" (Clark, 1983:209).

Tony Becher (1989) has written, not about the perceived affects of organizational

culture in higher education institutions, but has analyzed the academic organization through focusing on the impact of disciplines on specific attitudes, values, and behaviours of academics. His work can be regarded as being based on a fundamental dichotomy of cultures. Various dichotomous frameworks and classifications have been produced to categorize disciplines and disciplinary differences, from 'hard' and 'soft' to 'pure' and 'applied' to 'life' and 'non-life' to the organization of the disciplines into the humanities, social sciences, natural sciences and professional studies (Gaff and Wilson, 1971). These classifications are drawn upon by Becher in his attempt to explain cultural differences between disciplines (1981, 1989, 1994). Focusing on disciplinary cultures, he argues that "disciplines are also cultural phenomena: they are embodied in collections of like minded people, each with their own codes of conduct, sets of values, and distinctive intellectual tasks" (1981:109). Interpreting the structure and nature of knowledge within each discipline as core dimensions of differentiation, Becher (1981, 1989) identifies four general disciplinary cultures ranging from the 'hardpure' culture of the sciences, the 'softpure' culture of the humanities and the social sciences, to the 'hadrapplied' culture of engineering and technology, and the 'softapplied' cultures of the applied social sciences, like education and social work. Theses dimensions do not differ in essence from A. Biglan's (1973) dichotomous dimensions of 'hardsoft' and 'pureapplied' .

In his chapter in Clark's (1987) book on the academic profession, Becher explains the disciplinary shaping of the academic profession by offering four main categories for examining the ways in which the disciplines influence the profession: the initiation process of new members (socialization), the nature of the social interaction in a field, the type and degree of specialization in a field, and mobility and change in the discipline. He

recognizes, however, that members of the academic profession have many characteristics in common.

Becher as well as Austin (1991) point to the problems of categorizing disciplines and subsequently analysing their impact. According to Becher (in Clark, 1987:274), there are almost as many disciplinary classifications as the authors developing them, while Clark indicates that disciplinary cultures vary greatly (1987:76). In addition, Austin (1991) suggests that not all members of a discipline experience their work and careers in the same way. Despite the large number of categorizations available, the more one goes from the broad disciplinary categories into the sub-disciplines and specializations, the less agreement there is on their exact nature and borders.

In his later work, a study of what he calls "academic tribes" , Becher (1989) describes academics' reactions to innovative ideas outlining the motives for resistance, abandoning the discipline as the unit of analysis in his cultural approach. He points out that inquiry into academic cultures is by definition sectorial and localized lacking the broad and authoritative sweep of organizational or policy-centred research.

The conceptual frameworks of Clark, Austin and Becher assume that structures have an effect on academic culture, whereas William H. Bergquist (1992) and William Tierney (1988) examined below discern how culture can also be an influence on the structures of the organization. Bergquist (1992) uses definitions of culture from Bronislaw Malinowski (1948) and of organizational culture by Ronnie Lessen (1990) and Edgar Schein (1985) as well as William Tierney's work, as the basis for distinguishing four cultures in the academy. He focuses on archetypes by which institutions might be categorized and described. He hypothesizes, yet does not empirically test, that different

change strategies would be needed and appropriate within the four different academic culture archetypes that reflect any higher education institution – collegial culture, managerial culture, developmental culture, and negotiating culture.

Collegial culture arises from the disciplines. It values scholarly engagement, shared governance and decision making, and rationality, whereas managerial culture focuses on the goals and purposes of the institution and values efficiency and fiscal responsibility. This contrasts with developmental culture, which is based on the personal and professional growth of all members of a collegiate environment. Lastly, negotiating culture values the establishment of equitable and egalitarian policies and procedures, valuing confrontation, interest groups, mediation and power. For Bergquist, the managerial culture, for example, might hinder an institution's ability to change structures, whereas a collegial culture was better equipped to modify institutional structures because it assumes greater trust.

Ellen Chaffee and William Tierney's (1988) framework includes six characteristics that define the ways in which culture affects change within unique institutions: environment, mission, socialization, information, strategy, and leadership. Becher provides four elements of cultural archetypes, whereas Tierney provides individual institutional culture. Chaffee and Tierney conceptualize culture in terms of a paradigm that "views an organization as a social construction where participants constantly interpret and create organizational reality" (Chaffee and Tierney, 1988). The authors define culture as shared assumptions that can be identified through language, norms, institutional ideology and attitudes that emerge from individual and organizational behaviour. They point out that the culture will vary by organization.

Some have put forth an organizational perspective of academic culture whereby elements of academic culture are like corporate culture. Terrance Deal and Allen Kennedy (1989) define academic culture in terms of organizational myths, rituals and other components common to the above discussion of culture. This definition suggests a cultivation of individual identities by shaping values, making heroes, spelling out rites and rituals. Acknowledging the cultural network gives corporations and by extension universities an edge. According to the authors, these corporations have values and beliefs to pass along not just products; they have stories to tell not just profits to make (Deal and Kennedy, 1989). They emphasize that a strong culture is a system of informal rules that spells out how people are to behave most of the time and that it enables people to feel better about what they do (Deal and Kennedy, 1989). The role that culture plays is even more critical today as strong cultures are able to respond to an environment but they must also adapt to diversity and changing circumstances.

Research into the concept of academic culture offers some conceptualizations that can be more easily applied to this study than others. On the positive side, authors point out the importance of the disciplines, the difficulty of producing a university-wide culture, and the dynamic relation between culture and the institution and vice-versa. The weaknesses of existing conceptualizations are the instrumental and outcome orientation of organizational culture, the fact that most conceptualizations are not empirically robust, and the under-theorized nature of culture. The authors have used the term culture without explaining how they interpret it, how and why they want to apply it, let alone their underlying theoretical assumptions. In their work the term culture could be replaced by a number of other terms like climate, strategy, mission, without changing the nature of the

claims. In addition, authors merely describe the historical origins of the cultures, or where strategies for change violate cultural norms change will most likely not occur. Without identifying the underlying theoretical assumptions, the categorizations are quite arbitrary. The authors could have just as easily identified a rational culture, or a political culture, instead of, or in addition to, collegial or disciplinary cultures. At best, the instrumental core components of organizational culture have provided a basis for conceptualizing specific problems in higher education such as the relationship between institutional management and academic culture.

Consequently, the above mentioned works can best be regarded as a first step in unraveling the complex processes shaping academic culture. The authors define academic culture in terms which are not specific to academia, the collegial (disciplinary), managerial (organizational), developmental (professional growth), and negotiating cultures can be found in any institution or organization, and while universities are organizations, they are particular organizations as their core mission is the production and construction of knowledge. This requires a definition of academic culture that is specific to academic institutions.

My project addresses these weaknesses by being empirically and theoretically grounded, and by being more than instrumentally oriented. I want to go past culture's relation to innovation in order to learn more about academic culture in general. Taking into consideration the above constraints, the existing definitions of the cultural aspects of academics leads to the identification of several assumptions on which to base my inquiry. An important assumption is that within each institution there might be various and distinct cultures. Another assumption is that the distinctions among cultures in academic

organizations are developed along disciplinary, professional, institutional, and national lines. A professor and a student at a public university participate in their discipline, their university, the academic profession nationally and internationally, and the national academic system defining them as part of an academic culture. The structure of these interconnected systems influences changes in academic culture through socialization (theory, methods, jargon) and symbolic materials (learned societies); the institution's mission and purpose; the national system's history and policies; and the profession's ideologies (academic freedom).

Conceptions regarding academic cultures have historically and consistently excluded students in their definitions. I assume, however, that students are active participants in academic culture. Students are, in fact, one side of the 'coin' of academia. The inclusion of students is especially pertinent in this study, as one of the most important justifying assumptions of the integration of technology in education is that it allows for 'learner' centered models of education.

Thus, I re-define academic culture in terms of a combination of perceptions and practices that surface in questions about the process of creating knowledge: what is knowledge, how learning occurs and how it is facilitated, what should be the role of the professors, what should be expected of students, what goals are worthwhile and how are they best expressed, and what resources and infrastructure are needed. Decisions about these matters are not purely an individual choice, rather they are a matter of negotiation among a set of complex dynamics of conflict and agreement between the actors involved.

Based on this definition, my study explores how the integration of new technologies affects answers to the above questions, whether confirming or denying,

complementing or altering the process of creating knowledge. In this exploration, I use the theoretical frameworks of Michel Foucault and Pierre Bourdieu. The former to analyze the extent to which there are relations of power and knowledge at play in the practices and discourses of technological integration and the latter to examine the extent to which those practices and discourses shape the production of academic culture.

The following is a review of literature exploring technological implementation that specifically speaks to shifts in academic culture.

Technology and University Education

The lack of research that directly studies the relationship between the integration of technologies in university education and academic culture necessitated that the review of the literature bring together research from different areas of study. The literature derives mainly from educational studies, especially educational technology, knowledge media, instructional technology, and organizational studies. Literature from the area of education addresses the use of technology in university teaching and learning but has not specifically studied the cultural aspects of this integration. Literature from organizational studies offers analysis of the impact of technological integration in the areas of work, management and culture of organizations but has traditionally not included universities as units of analysis, as well as being mostly quantitative research.

In light of these limitations, I organized the following review in terms of two areas associated with the integration of technology in higher education from the point of view of those using the technologies: the views and the practices. The views and practices represent the internal context in terms of individual academics focusing analysis

at the micro level. The views and practices were grouped into two respective sections: technology *and* education, and technology *in* education. Such grouping is meant to highlight that although the terms tend to be used interchangeably they have very different, although clearly interrelated, meanings. Thus, technology *and* education is about the views on the integration of technology in higher education, and technology *in* education is about the actual practices of using the technology in teaching, learning, publishing and research.

In spite of not directly relating technological integration in higher education to the cultures of academia, the literature reviewed does either directly implicate or strongly provoke such a relation, positioning my study from a communications perspective. In addition to concentrating on the politico-economic context at the expense of the cultural, a notable gap that surfaces from the literature is a failure to distinguish between the different types of education that technologies make possible. A distinction needs to be made between technologies being used because of distance, vocation, or demography, and technologies being used in conventional university teaching, or blended learning. The literature reviewed is used to identify instances of contestation that might elucidate struggles in academic culture and is not intended as a complete survey of technological trends. In this study, a distinction is made between distance education and online education. Distance education refers to the education programs offered by a university via the traditional means of post office and correspondence or television, with no face-to-face component. Online education refers to computer-mediated education either referring exclusively to online teaching or in terms of a combination of online and face-to-face components (as hybrid courses combining traditional with online teaching and learning).

The literature reviewed here focuses specifically on the latter, that is, the integration of technologies in a blended format combining conventional classroom teaching with online components. This is because the focus of this study is on academic culture, which is defined in terms of lived and embodied interaction. The literature reviewed focuses on the regular uses in the daily practices of teaching and learning, and publishing and research. Academic culture is about perceptions of technological use; it is not about evaluations of the extent to which technologies actually serve to enhance practices of teaching and research.

Technology and Education

Literature in this section highlights the views academics hold regarding the integration of new communication and information technology in higher education ranging from pro to anti-technology. The positions about technology and education help to situate two extremes of the academic culture continuum, one, supporting technological integration as diversification and, the other, opposing it. The positions supporting technological integration can sometimes be technologically deterministic while the critical views fail to portray any appropriate uses of new technology at all. Further, this bifurcation in the literature does not acknowledge the levels of variation and interaction between the two extremes.

Pro-Technology Perspective

A defining characteristic of information society and globalization, Robin Mansell suggests, is "that the activities of creating, distributing and consuming information are of

growing importance in the lives of its citizens" (Mansell, 1999:129-130). The author contends that the abundance of network access and electronic information supply is being accompanied by a fundamental shift in the way economic value is generated from information. Similarly, Leslie Pal offers an economic interpretation of the information revolution emphasizing the rise of a "knowledge economy", of information as a new form of capital, and of a new class of "knowledge workers" that will be a potent political force (1999:12). Economic restructuring, constraints on resources, rapid technological change, and increased international competition are shifting the West to an economy based on knowledge and information. The move towards an information society is taking place in the education sector through the integration of new communications technology in teaching, learning, publishing and research.

In *The Future Compatible Campus: Planning, Designing, and Implementing Information Technology in the Academy* (1998) Diana Oblinger and Sean Rush promote technological integration in higher education. In the first chapter "Transforming the Academy", Kristine Hafner and Oblinger state the rationale for the "future compatible campus" positing the need for change in education in the following terms: "since the Gutenberg Bible was printed in 1456 using movable types, the technology of information storage, retrieval, and transmission – the university's basic technology – has remained essentially constant until the current era" (1998:8). In the same edition, Oblinger and Hafner strongly suggest that schools should integrate technology, and warn those who might be resistant to such integration, that in order for schools to "reinvent themselves as more competitive institutions" and "to be prepared to survive and thrive in the global marketplace, they must be flexible, highly efficient, and adaptable to change" (1998:22).

This view is adopted for all levels of schooling. The authors use terms such as "reengineering" or "restructure" indicating that there is a need to transform higher education because "processes have been frozen for a long time, because student needs are changing, and because technology has opened up new possibilities" (Ibid.). The rationale for the integration of technology in education is that major reforms are being undertaken worldwide in order to prepare society for continuing competition in a knowledge-based global economy. Thus, the opportunity arises where the business of education looms as potentially enormous profit center of great interest to corporations in banking, communications, information technology, entertainment. In this context, education becomes an industry, a global industry that over time will become a global business. Increasing competition leads to an industrial-like, for-profit type diversification of education. This implies a framing of academic culture as outdated and in need of change and measures its efficiency largely by market standards.

The integration of communication technologies in higher education is seen by Sir John Daniel (1996, 1999) as part of an increasing diversification of teaching and learning. Sir John Daniel was the Vice-Chancellor of Open University 'virtual' charter school in England in the early 1990s and is currently the Assistant Director-General for Education at UNESCO. He challenges the assumption that universities can continue to educate as they usually did. His work illustrates the process of developing a technology strategy that will support institutional goals using England's Open University as an example. Daniel offers a model in which change can be supported by technology from the organization as a whole, while allowing units to determine the best way to carry out their own practices for their students and disciplines. While Daniel would disagree with the notion that the

corporate sector will take over the role of government in being responsible for higher education, he believes that there is a role for the corporate sector in education. The role is to provide training in standard skills at a cheaper cost while universities will revert to and assume their core function of training critical thinkers (1999). Although supporting and promoting technological integration for distance education he significantly implies a distinction between distance education and face-to-face traditional education. This suggests that some aspects of traditional academic culture play an important role in the creation of knowledge.

Clearly evident in the pro-technology perspective is a link between the educational system and the economic sector. The extent of this link is a contested issue with academic culture.

Anti-Technology Perspective

While numerous research articles exemplify a perspective that supports the integration of technology in higher education, there is a comparative amount of literature challenging the transformation of education through such integration in highly critical terms. Arguing that the 'knowledge' society is really an umbrella term for globalization, therefore, representing a renewed social Darwinism in which everyone is defined in relation to a free-market model, Langdon Winner contends that:

> the evolving arrangements of technoglobalism and ideologies associated with them place strong pressures on the institutions and practices of education. Many of the forces that have transformed corporate structures, slipped the distribution of wealth and undermined the coherence of human relations in society as a whole now promises to alter and degrade education at all levels, from kindergarten to the doctoral degree (1997:169).

Similarly, Rob Kling and Lisa Covi (1997) assert that the themes that characterize globalization include a restriction on democracy, imposing limits on the capacity of government to carry out the wishes of its citizens to put restraints on the excesses of globalization. The authors posit that, this may lead to a distortion of the social purposes of education when it becomes too centered on its relationship to the economy. The expression of these concerns implies that there are goals and practices that are deeply encroached and fundamental in academic culture, particularly those related to democracy and social responsibility, and frames academic culture as a balancing source imposing restraints on extreme globalizing tendencies.

A variety of studies have highlighted specific ways in which the integration of technologies in scholarship is considered to be aggressively insisted upon by institutional managers. (Katz and Associates, 1999; Tudiver, 1999; Lewis, Massey & Smith, 2001; Moll (Ed.) 1997; Stoll, 1995; Postman, 1995, Carroll, Christiansen-Ruffman, Currie and Harrison (1992). These studies suggest that changes in technology are viewed by university management as a solution for effective cost-cutting, rearranging demographics, increased class size, fewer faculty and all perceived or actual problems in education. This is accompanied, they suggest, by an ideological campaign that defines education as a commodity for sale in a competitive market, its students as customers. The notion of a "corporate" university is proposed by Neil Tudiver (1999) as replacing the "traditional learning center concept of providing services with a profit center model of selling commodities – a fundamental change in the values and priorities of the university" (1999: 155). The implication of his argument is that, in contrast with Daniel's position, diversification is really limited to 'corporate' or for-profit education. Agreeing that there

will always be a place for traditional on-campus education, Tudiver nonetheless posits that corporations will develop their own universities, publishing companies will develop curricula and the system will be driven by mass-customization (1999:155-170). The views supporting the for-profit model of public education enabled by communication and information technologies diverge considerably from the model of knowledge creation developed and embraced by traditional academic culture.

Those whose position is anti-technology question the benefits of the diversification argument as well as the emphasis on a learner-centered approach enabled by technological integration. There is a wide spread perception among pro-technology scholars that a change in paradigm is occurring whereby the learner is the motor of his/her own formation and that individualized learning and 'just-in time' education will dominate the organization of education. Although the themes that characterize and justify the integration – a learner-centered environment, lifelong learning, asynchronous (anytime, anywhere) learning, interactive and collaborative learning – are perceived to be filing the needs of educational institutions, anti-technology views critique the claims as overstated. The transformation of higher education through the integration of new information and communication technologies is seen as a challenge to current assumptions about how universities operate and for whom. They argue that the driving forces behind the implementation of technologies are not pedagogical but economic such as, declining budgets, greater need for flexibility. These forces combine to create competition for emerging "corporate" or "virtual" universities.

Anti-technology positions, however, tend to see the integration of technologies as a form of commercialization and corporate control of education and the complexities

associated with the adoption of new technologies are not addressed, flattening the study of culture. While outlining that the justification for pushing the integration of technology is placed within an economico-political framework, literature critical of technology has been by and large negligent in addressing the cultural assumptions that underlie technological integration in universities.

An exception to this is Robert Allison and David Scott's (1998) study of the issues faced by faculty members when integrating new communication technologies in teaching. The authors point out that, the technologies place a great emphasis on the learner and that this has implications for the role of the faculty. There is a possibility that educators will concentrate on the role of faculty in teaching rather than teaching as the operational mind-set in higher education. The role of faculty now includes the typical subject matter expert (curriculum development as usual, but curriculum and design skills will become more important) as well as Course Ware Design, Instructional Resource Manager, Learning Systems Manager, Staff Developer, and Teacher (1998:75). In addition, as faculty roles change so will the base upon which compensation is granted. In my study, I focus directly on the cultural aspects of technological integration in university education and academics' perceptions about knowledge creation, the role of the university, the professor and the student.

The literature on the relation between technological integration and higher education, pro-technology on one hand and anti-technology on the other, hints at the parameters that circumscribe academic culture in a continuum between neo-liberal and critical approaches to technological integration in teaching, learning, publishing and research. However, there are considerable gaps in this literature, and when authors

position themselves in one camp or the other they neglect to consider the likelihood of combined approaches to technological integration. As my respondents made clear, there is not a proper division between pro- and anti-technology views of the technologies in participants in university education, but rather various areas of contestation that displace and confound bifurcation. These areas of contestation are taken as an indication that the integration of technology places significant pressures on elements of academic culture.

Technology in education

This section highlights a sample of current research on the practices of using new technology in teaching and learning, publishing and research. The literature reviewed in this section reveals that the critical views intersect with the technological practices. Overall, however, this literature tends not to deal with culture.

Teaching and Learning

Studies have linked technological integration to various enhancements in teaching and learning. Research has been conducted that links online conferencing to knowledge building through collaboration (Campos, 1998 and 2000; Campos and Harasim, 1999); that demonstrates enhancements in distributive work and course management, as well as linking the use of computers to networked learning (Bracewell et al, 1998); that links the use of new technologies to learner-centered environments by supporting a variety of learning styles (Guimarães, Chambel and Bidarra, 2000) and underprepared college students (Anandam, 1998); and that addresses the 'appropriate' use of technology in instruction (Noble, 1997, Gandell, Weston, Finkelsttein, & Winer,

2000 and Lewis, Massey and Smith, 2001). In addition, the Winter 2000 edition of *New Directions for Teaching and Learning* entitled "Principles of Effective Teaching in the Online Classroom", as well as articles by Jay Howard (2002) reported in the *Journal of Higher Education*, where there is a tacit assumption that the use of Web based instruction (referred to by some and WBI) enhances learning.

Research reported in the Winter 2000 edition of the journal *New Directions for Teaching and Learning* entitled "Principles of Effective Teaching in the Online Classroom", based on American universities, links effective 'online learning' with student-centered pedagogy. This is specified by arguments that the online classroom changes the role of the professors from judge to coach (Knowlton, 2000) and by the importance of taking into account the design of the courses for "learning in the electronic classroom" for distance education (Morrison and Guenther, 2000). This highlights the advantages of computer-based instruction as its flexibility and asynchronicity. Linked to the notion of student-centered pedagogy, Michael Simonson (2000) writes about how online classrooms not only change the role of the professor but also the role of the students who become "source" and "seekers" respectively. The analysis frames Web-based education as student-centered as it promotes independent learning.

At the same time, there is a recognition that the "cyberclassroom" needs to be 'humanized' (Hacker and Niederhauser, 2000). In their review of computer aided instruction, Douglas Hacker and Dale Niederhauser conclude that, "rigorous tests of the effectiveness of online classrooms have yet to be performed" and that there is no "guarantee" that the methods proposed "will lead to deep and durable learning" (2000:63). Similarly, the notion of a digital 'reformation of education' is challenged in

two articles on the ethics of online education. One entitled "The Academy, Online Classes and the Breach of Ethics" (Speck, 2000), where the author notes that the commercialization of online courses my lead to an effacing of academic integrity. The other, the epilogue, entitled "Cautionary Note About Online Classrooms" (Carstens & Worsfold, 2000), the authors discuss how online courses may be redefining education at the expense of actual learning and the extent to which the "religion of technology" stands as evidence of the triumph of the nineteenth century materialism.

Research by Terry Gandell, Cynthia Weston, Adam Finkelsttein, and Laura Winer (2000) on the instructional use of information technology in higher education indicates limited gains in productivity or pedagogical enhancement. Their study proposes a framework for aiding the Web user to "distinguish between intentional and appropriate use of the web for achieving learning goals" (2000:2). The authors define 'appropriate' as the use of the Web that has an impact on student learning, that is relevant to the stated learning outcomes and that is matched to the types of learning desired (2000:5). They present a framework for appropriate use of web features of the Web CT[1] server (content presentation, searchable information, information exchange, discussions, simulations, guidance, practice and feedback) for facilitating types of student learning. The features of discussions, simulations, guidance, practice and feedback are related to the understanding and thinking while the other features facilitate knowing. However, there is nothing that is particular to the use of the technology in their analysis. While it might be appropriate to use the web feature of discussion in the Web CT server because it promotes and supports a certain type of learning, the same strategy of discussion can be used during the class in

[1] see www.webct.com for details on the server and Chapter Two for an extended discussion on the uses of the server.

a traditional environment. The fundamental question that remains to be answered in future research in relation to teaching and learning is whether new communication technologies can be used to enhance all types of learning: knowing, understanding, and thinking (LaSere and Strommer, 1991) or deep learning (Ramsden, 1992) that form the cornerstones of face-to-face higher education.

The above study confirms other studies' conclusions that, while there may be merit in implementing some technology to carry out a particular task, and any technology can be well or poorly suited to support a specific teaching or learning method, research has not yet addressed which technologies are the most suited for supporting the best methods of teaching and learning (Gandell et al. 2000). Gandell, Weston, Finkelsttein, and Winer suggest that this may be because educational goals are not well defined and that such defining should be the most important factor in deciding on the use of technologies.

Evidently, technologies are being used to guide faculty and students in teaching and learning. However, without making explicit the learning outcomes expected by the use of the technologies as an instructional strategy, one cannot assess its pedagogical value. The lack of empirical evidence of a positive association between using computer dependent technologies and excellence in teaching and learning, in the context of blended education, dramatically contrasts with the push by university administrators, corporations and society at large for such integration.

While it may be reasonable to use technology for delivery of distance Business Administration courses; or to use the WebCT browser to make information available and manage part of an International Executive Training program in Algiers; or to develop and

use Back to Basic courses as computer simulated medical modules; or to develop the Intelligent Classroom as evidence of technologically enabled programming, current research is recognizing the acknowledgement that professors are feeling pressured by administration or their peers to start incorporating new technologies into their teaching. The literature, however, does acknowledge that there is a need for more comprehensive studies of the relation between technological integration and learning styles, teaching philosophies, and the outcomes of learning. My analysis elucidates the extent to which the adoption of new communication technologies is influenced by different individual and cultural conceptions of teaching and learning and learning styles. More importantly, it pertinently situates this in relation to the culture of academics. Finally, it suggests the relationship between academic culture and technologies is complex and varied.

Publishing and Research

The institutional and traditional hierarchy that has been established between scholarly journals and other ways of publishing has historically been seen as one of the most problematic aspects of academic culture, mainly because of its association with a gate keeping function as highlighted by respondents, and this issue resurfaces with the possibility of publishing through computer mediated or online means. Publishing online means publishing papers and articles in electronic journals.

The 1997 Summer/Autumn edition of the *Canadian Journal of Communication* was dedicated entirely to publishing online. Especially insightful is Kennedy Field's article on "Faculty Perspective on Scholarly Communication"; as well as David Beattie and David McCallum's article on "Promoting Electronic Scholarly Publishing in Canada:

Initiatives of Industry Canada". Field's article describes the ways in which scholarly communication is changing to "positively affect the current state of affairs". This state of affairs is the backlog in publication, the cost, and the gate keeping function of many journals. Referring to electronic forms of publishing he contends that electronic communication in the sense of electronic journals is based on the same peer review system as in paper-based journals, allowing alternate, marginal voices an opportunity to be heard (1997:3). Field describes the advantages as interactivity and speed, given the usual backlog of paper-based publications, and supports the idea that the integration of new communications technology, such as the Web and the Internet, must be supported by government policies as well as scholars and institutions as part of "the opportunity to learn and become a part of the information society" (1997:12).

Despite the advantages of speed and ease of access, distribution and production, there are some concerns identified by the academics I interviewed with online publishing active in academic culture, as will be evident in Chapter Three. Challenges in this area concern copyright and intellectual property as well as the less mentioned issues of distinction and status without academic culture and the work habits of academics.

Books and journals, lecture series, workshops and conferences, are all fora for scholarly communication whose character can be influenced by the medium of communication. Advocates of electronic communication often hold that paper-based journals (and books) will become obsolete within a few decades (Hibbits, 1996), that electronic publication offers an exceptional opportunity to speed and expand the range of scholarly communication (Okerson, 1991; Kling, 1996), and furthermore that the shift to scholarly electronic publication is inevitable (Bennett, 1996). Communications

technologies are clearly influencing the scholarly process for gathering data and publishing results (Hannum, 2002, Lougee, 2001). However, some have cautioned that advances of speed and quantity come at the expense of knowledge fragmentation where contra a 'global village' ideal, researchers will retreat into communities of like minded individuals (Gregorian, 1994). The promulgation of online publishing tends not to focus on how academics conceptualize the changing scholarly communications and their social roles. My study addresses this gap.

Theoretical Framework

How can shifts in academic culture provoked by using technologies in teaching and learning, publishing and research be conceptualized and explained? Modern communications theory posits that the function of means of communication is not a secondary or derivative activity but a distinct set of primary meaning-making activities. More recent developments in social theory have emphasized that communication instruments are primary tools societies use for constructing and signifying reality. The building blocks of making-meaning derive from the social milieu, the ideas and images that have currency within a particular society. It is the meaning we apply that organizes reality. Communications is at the intersection of the humanities and social sciences analyzing technology's relation to society as practice, in terms of daily work routines and also in terms of the underlying thinking about technology (Franklin, 1990; Carey, 1988). The emphasis is on seeing communication as a combination of technology and culture.

Thinking about knowledge and university culture being influenced by technology has theoretical implications that are brought together here in the work of Pierre Bourdieu

(1988) and Michel Foucault (1979). Both authors are using empirical evidence focusing on institutions such as the academia, the hospital and the prison. The main difference between the two authors for my purposes is that, Foucault brings a more homogeneous view of the academy than Bourdieu. On the one hand, there are the discursive formations that are a regularity among the sciences, and on the other, a diversification of education in the *habitus*, struggling for position. Finally, both Bourdieu and Foucault lead to a radical criticism of academic practices, enabling me to talk about academic culture in terms of a theory of social and cultural reproduction. Further, both Bourdieu and Foucault guide the inquiry in terms of methodology. Following Bourdieu, I interview academics in order to analyze the perceptions of integrating technologies in their daily practices of instruction and research. Foucault guides my inquiry in the direction of the discourse formations surrounding technological integration in the specific institutional setting.

Discourse Formations

My analysis in Chapter Four is informed by the theories of Michel Foucault (1979). His notion of discursive formations and their relation with power and knowledge are particularly insightful when the field being studied is university education, having the explicit mandate of the production of knowledge.

Discursive practices are not a science or an alternative to science rather they are bodies of knowledge that define what is a legitimate discourse and impose this discourse as the only and true way of analyzing events. Education is, of right, the instrument whereby individuals in our society can gain access to any kind of discourse. But every educational system is a political means of maintaining or of modifying the appropriation

of discourse, with the knowledge and the powers it carries with it. Discourse is only an activity of writing in the first instance, of reading in the second and exchange in the third.

The term is introduced above all as a counter position to those who understand writing as an expression of a subject, those who in their search for meaning in acts of reading or listening move from words back to consciousness. Thus conceived, discourse is not the majestically unfolding manifestation of a thinking, knowing, speaking subject, but, on the contrary, a totality, in which the dispersion of the subject and his discontinuity with himself may be determined. The term discourse lies not in relation to a well defined object but in relation to a level of analysis of any knowledge domain.

The distinctiveness of modern western societies is associated with a particular historical shift of emphasis from the exercise of absolute power by the sovereign, to the emergence and development of governmental technologies of power directed towards an administration of the process of life in order to optimize their political and economic utility. Foucault's thesis is not that human existence has been completely governed and controlled by techniques of power, like the iron cage. Rather, systems work in their own terms. Institutions such as the hospital, the prison, the psychiatrists' couch have constituted contexts within which relations of power have been formed and exercised. In addition, they were laboratories for observation and documentation from which bodies of knowledge have accumulated about the sick, the mad, and the criminal and the sexual object. Foucault's thesis is that the emergence and diffusion of technologies of power exercised over life, their associated methods of examination, techniques of subjugation and objectification, and procedures of individualization, provided the appropriate conditions in which human sciences could emerge. In turn human sciences, drawing upon

a conception of normality accorded scientificity by virtue of its derivation in the biological and medical sciences, contributed to the enhancement and refinement of technologies of power.

This structures some of my questions to the extent that the university is an institution where discourses are produced that create categories of what is more or less acceptable, and this form of categorization serves to classify and hierarchize becoming a technology of power. In attempting to ascertain the relatively complex ways in which academic culture is developing a relationship with the institutional implementation of communication and information technologies, one of the main questions becomes what are the discourses surrounding that implementation? The discourses are on one hand, the institutional policies and guidelines, and on the other hand, the academics' perceptions of their experiences with using the technologies.

For Foucault, there is no disinterested knowledge; knowledge and power are mutually interdependent. A site where power is exercised is also a place where knowledge is produced. This does not mean that knowledge is relative to socio-historical context or that ideology conceals a true knowledge, simply that knowledge and power are necessarily linked: "there is no power relation without the correlative constitution of a field of knowledge, nor any knowledge that does not presuppose and constitute at the same time power relations" (1979: 27-28). Following Foucault, discourse analysis provides the most appropriate research program for the analysis of the development of a cultural field by focusing on the relations between the administrative apparatus and the elaboration of knowledge formations, productive of distinctions.

The key epistemological commitments of Foucault lie in a focus on the analysis of

the relations between discursive and institutional levels of social power refusing to portray the development of specific practices of government as the teleological outcomes of either progress of liberal rationality or the power relations of capital and class. Following Foucault, in my study discursive formations can be defined as the combination of educational technology policies, guidelines, vision statements, budget re-allocation, distribution of research grants, reports from the various committees on online education, as well as the creation of information technology apparatuses. A discourse analysis of the texts aims to discern the discursive formations, which are constituted by and shape particular statements, policy logic and criteria in universities adopting new technologies. Foucault instructs us to look at the forms of power and knowledge present in the discourse formations, elaborated as truths, but which produce distinctions.

As a Foucauldian expression of power, institutional discourses emphasize technology as a tool to enhance scholarship but in fact this is not a power neutral practice. In this way, we understand how the integration of technology is expressed as a good for the people, while simultaneously provoking resistance at the level of individual members of the institution. The implementation of new technologies is announced in terms of enhanced opportunities for students and faculty: delivery at a distance, diversification, enhanced choices and more time. The perceptions of academics in response to actual practices are more nuanced. These discourses are fundamental in shaping academic culture.

Foucault's conceptualizations of the relations of power and knowledge have implications for theorizing academic culture and its relationship to technological integration in university education. I examine how the shifts in academic culture

provoked by the institutional implementation of new technologies can be understood in terms of a dynamic power and knowledge relation.

The *habitus*

A conception of culture as a creation of meaning has resonance with Pierre Bourdieu's notion of culture, where culture is constitutive, not in the form of value orientations or guides or models for action, but finely ingrained in what Bourdieu calls *habitus*, or the habituated practices of human beings. This moves away from traditional definitions of culture used in anthropology and organizational studies. His examination of academia in modern France is a study of pedagogy in action and, in particular, its analysis of the exchanges of symbolic capital and power in the field of higher education serves as an excellent blue print for designing a study of the cultural response to computer mediated scholarship.

Bourdieu is one of the few social scientists to comprehensively study the world of academics and I use his analytics in Chapter Five to explain the social production of academic culture articulated through its relationship to the integration of technologies in scholarship. Bourdieu's program is a study of the conditions of production of academic knowledge, technical expertise, and bureaucratic power in contemporary France. My study resituates this to current Canada in a context of technological change.

In *Homo Academicus* (1988) Bourdieu points out that his analysis of the "academic world aims to trap *Homo Academicus*, supreme classifier among classifiers, in the net of his own classifications", in modes of thought which remain opaque to him because they are too familiar. His analysis offers a model of interaction and cultural

reproduction of academics understanding academic cultures as a part of a *habitus* formed and maintained by the accumulation of cultural capital in a 'field' where the struggles for dominance occur. The notion of *habitus* directly links to my definition of academic culture as a combination of perceptions and practices in the process of creating knowledge. The *habitus* is a set of acquired dispositions functioning on a practical level as categories of perception and assessment or as classificatory principles, as well as being the organizing principles of action (Bourdieu, 1988). These categories of perception consist of the rules or behavioral norms that are the cultural assumptions of the field. The *habitus* is the most subjective of Bourdieu's constructs: norms of behavior whose implementation or violation is an indication of its importance individually operationalized but a collectively effective method for regulating behavior within the field (1988:143-144).

The *habitus* is a system of shared social dispositions and cognitive structures, which generates perceptions, appreciations and actions. It is Bourdieu's assertion that in the academic system,

> the stability of the system over a period of time supposed that the teachers were endowed, at every hierarchical level, with the academic habitus, a *veritable lex insita*...an immanent law of the social body, which, having become immanent in the biological body, causes the individual agents to realize the law of the social body without intentionally or consciously obeying it: in the absence even of any express regulation or any explicit warning, aspirations tend to adjust themselves to the modal trajectory, that is the normal trajectory for a given category at a given moment...(1988:143-144)

within a community of practice.

The field is defined as a competitive system of social relations functioning according to its specific logic or rules. The field is the environment that surrounds the

habitus, it is the site of struggles for power between the dominant and the subordinate classes. *Habitus* describes the rules within which cultural struggle takes place, while the concept of symbolic capital defines the tools used by individuals and institutions within a field. Symbolic capital refers to the tools of everyday practice, which creates cultural and economic capital exerting power and ensuring survival (Ibid: 149). Cultural capital is a key concept in Bourdieu's model of interaction and cultural reproduction. The notion of cultural capital, like economic capital, conveys legitimacy regulated by the institutions within society. Within the various fields, legitimacy (a key aspect defining the dominant class) is conferred in the form of symbolic power, not socio-economic but a set of relations that defines roles. The contestation surrounding certain uses of new technologies is seen in the analysis as symbolic capital, which, in turn, maintains intellectual capital.

The formation of academic culture is based on struggles between and among fields for capital. Bourdieu explains the formation of dominant academic cultures as the dominance of certain cultural assumptions over others. In the relations between technologies and teaching, learning, publishing and research the struggle for position is a common struggle and the field is the whole academic field (not disciplinary) stipulating which practices are appropriate and which are not. The conventional academic practices of teaching and learning, publishing and research are essential aspects of the *habitus*. The struggle for position is not between academics and their field but between different forms of education.

Reflexively deconstructing the notion of academic neutrality, Bourdieu argues that the most valued academic forms of communication, such as journals are controlled by small groups of scholars who refer one to the other, and who are part of the same

committees. Furthermore,

> it is not, as is usually thought, political stances which determine people's stances on things academic, but their positions in the academic field which inform the stances that they adopt on political issues in general as well as on academic problems. The margins of autonomy...[in the] production of opinions then varies according to the degree to which the interests directly associated with their position in the academic field are directly concerned, or in the case of the dominant agents, threatened (1988:XVIII).

Thus, the distribution of academic works according to their degree of conformity to academic norms corresponds to the distribution of their authors according to their possession of academic power.

Although Bourdieu was not a poststructuralist in the same sense as Foucault, nor even necessarily a critic of modernity, his reflexive sociology does not rely on a dualistic epistemology of structure and culture. The concept of *habitus* moves away from that as a starting point. Bourdieu conveys the way in which enduring social things achieve spontaneous expression in practical life by focusing on the cultural dispositions of individuals in collective action. He focuses social theory on the practices of everyday life, from which he seeks to derive the world's structures. His ideas put enormous strain on a naive faith that the social world was ordered by progress from a center towards an end. The idea of *habitus* is the notion that objective structures never work in the abstract but exert themselves in the habituated dispositions of individuals. In habits, subjective consciousness meets objective reality in practical action that endures, providing a view of culture away from a set of guides or rules of behaviour towards habituated practices.

The view of academic culture as the habituated practices of academics contributes to an understanding of the power and knowledge dynamics in its relationship to technological integration. It serves as a powerful way to conceptualize and interrogate

academic culture and its relationship to technology in my study. It shapes not only my conceptualization of the object of study but my approach to that object.

Methodology

To analyze the ways in which academic culture negotiates the implementation of new technologies, I examine the perceptions of academics, which I read as the discursive traces of academic culture. Asking how academics are negotiating the pressures of using new technologies, both from the institution and from within itself, and how academic culture is changing in response to those pressures.

In order to address the expected complexities and subtleties of the object of study, I have constructed a methodological approach that purposefully allows a broader, in depth understanding of the intricacies of academic culture. I investigate the communication infrastructure such as the information services and resources at two universities in Montréal, where one is predominantly English speaking (McGill University) and the other is predominantly French speaking (Université de Montréal). In addition to being both relatively "Ivy League" institutions in the Canadian context, these universities provide a rich and similar engagement with technology in a blended format. The main body of data derives from in person, in depth interviews with 20 professors and students at each university beginning in November of 2003 and ending in the June of 2003. I also conducted ten interviews with a variety of administrative support personnel for technology integration at both universities and two editors of journals, which are experimenting with creating online journals. The purpose of these later interviews was to

ascertain the levels, and various aspects, of integration and resistance that the administration is encountering from academics. They also enhanced the discourse analysis of the institutional discourse and allowed me to have access to some of the statistics that characterize technological integration at these two universities. Although it might have been useful to interview administrators at the top administrative levels, particularly with regards to pressures in the institutional discourse. However, because the focus remains academic culture and the creation of knowledge the choice seems reasonable.

The main interviews inquire about the experiences of professors and students with new communication technologies and solicit their perceptions of those experiences. The analysis of the interviews yields important data on faculty and students' perceptions about teaching, learning, publishing and research in this environment, and how the experiences with computer mediated communication have changed their scholarship practices. In addition to inquiring about practices, the interviews included questions about perceptions related to what constitutes knowledge, the role of higher education, the professor and student, and the role of new technology in the practices of instruction and research in an attempt to more fully map academic culture. In including the levels of computer use (in terms of types of use, and specific technologies used), I acknowledge the type of users in my study at neither extreme of being slow adopters or leaders in adoption. This helps to explain why some faculty members and students tend to use certain technologies more than others in teaching, learning, publishing and research.

To integrate the macro (governmental and institutional policies) and the

micro (individual views and practices) levels of analysis, the research included three interdependent phases of study. Participants were recruited (see Request for Participation, Appendix I) from university wide emailing lists and selected sequentially as they replied. The request for participation to professors was sent to four different departments representing the disciplinary range described in the literature on academic culture: Electric and Computer Engineering, Physics, Education and Counselling Psychology, and Communication Studies (which includes Art History at one of the Universities). To recruit undergraduate students, I sent the same request for participation to undergraduate student associations' mailing lists. Although my initial attempt was to ask permission from the office of the Dean of Students to send my request for participation through their mailing list, my request was refused with an email explanation that the list was used only for official "office of the Dean of students business"[2] and that to approve it would have set a precedent for other "outsiders" to make similar requests. In recruiting graduate students, I sent the request for participation through each of the four departments' graduate students' mailing list or through the graduate students' societies at each university. The candidates were self-selecting.

The interviews closely followed an interview guide (see Appendix II for professors and III for students), which is structured according to certain clusters representing the major concepts and questions intended to be addressed: teaching, learning, publishing, academic culture, knowledge production and consumption and some general demographic questions. The interviewees were required to provide consent in a form describing their role and summarizing the project prior to beginning the interview (see Appendix IV). The research follows the universities research guidelines and was

[2]From the Email response to my request

approved by the McGill ethics review board (see Appendix V). The second, concurrent phase entailed documentary research on vision statements, policies, guidelines, initiatives and other documentation relating to the integration of new technologies.

Other methods include participant observation of online communication, such as emailing lists, and field work on the technological infrastructure at the universities in terms of ascertaining the amount of technologies used in the university's departments and information systems. The content analysis and participant observation complement the individual interviews as techniques of confirmation and comparison, and provide descriptive observations of online practices and institutional infrastructures. Following the collection of data and documentary research, the final phase involved the analysis and interpretation of the data concerning the extent to which academic culture is impacted upon by the integration of information and communication technologies and therefore issues related to the perceived implications of new technologies and their relation to broader academic culture.

The interviews were tape recorded and transcribed by me. A few interviews were conducted in French and subsequently translated by me. I indicate the instances where this occurred throughout the chapters. I use pseudonyms for the respondents in order to maintain their anonymity. In conducting the interviews two things became interestingly apparent. First, it was interesting to see that some respondents were clearly engaged with the technologies and had a lot to say about using them. These respondents were eager to talk about their practices and views on the implementation of technologies in their daily practices. For other respondents, the interview questions made them think for the first time about how and why they were using the technologies. In both cases, many

interviews seemed to be a "purging" that, in the act of articulation, crystallized respondents' perceptions. Respondents appreciated that, "finally" they had an opportunity to talk and reflect about the uses of the technologies that have become such a large part of their daily professional lives. They shared positive emotions and frustrations with me. It was a privilege to talk with them and the data obtained was rich and in depth. In the difficult decision about which quotations to use in the analysis, I chose those that more effectively were representative of an analytical point. At the same time the quotations were never taken out of context and are used as representatively as possible.

The second interesting point is that, participants never questioned my use of the term academic culture, although I did not define it. These academics were comfortable with the assumption that an academic culture exists and welcomed the opportunity to talk about it. Despite the richness of the interview data, this remains an exploratory study necessarily limited in its scope by size and the self-selection of my respondents. It should be noted that the I decided that the interviews would structure the analysis as the object of study focus on respondents' perceptions.

This study maps how academic culture is dealing with the implementation of communication and information technologies in two universities in 2004 in the city of Montréal. The mapping begins with a description and analysis of the practices of teaching and learning in Chapter Two and publishing and research in Chapter Three. This is followed by an examination of the institutional and academic discourses that frame the integration of technologies in those practices in terms of relations of power and knowledge in Chapter Four. In Chapter Five, I define academic culture and examine its theoretical implications. Chapters Two and Three answer the question of what

technologies professors and students are using and for what purposes. In other words, establishing which practices are becoming a regular part of everyday work. The analysis is of the academics' perceptions of the advantages and limitations of using certain technologies in academic work. My study focuses only on the technologies identified by my respondents. Varying from least to most contested, the specific technologies discussed by the respondents are: Word for preparation of class content; PowerPoint for presentation of class content; email, the Web and WebCT for communication of class content, sharing information, searching and publishing. In their "everydayness", these uses of technologies constitute the regular practices of the *habitus* in academic culture.

In Chapters Four and Five, my analysis is informed by the theories of Foucault and Bourdieu, respectively. Chapter Four, examines how the technological practices of teaching and learning, publishing and research can be framed with an institutional and an academic discourse that identifies the relations of power and knowledge at play in academic culture. Chapter Five, discusses and defines academic culture and its relation with technological discourse. Academic culture reflects both appreciation as well as contestation and struggle in relation to new information technologies.

The concluding chapter summarizes how, based on respondents perceptions, the integration of new technologies in university education is being subjected to questioning. Paralleling increased adoption, there is also increased contestation. This contestation stems from an academic culture that predicates scholarship on the face-to-face creation of knowledge providing a clear answer to the question of the role of the university in higher education. This chapter also discusses some of the limitations of the study, such as cautioning against generalizing the findings to other universities and higher education

institutions and proposes some directions for further research in the area of new technologies and cultural reproduction.

Chapter 2
Intelligent Classrooms and Smart Software: Teaching and Learning in Two Universities

> *I remember the best classes I had the teacher said 'read the articles and come with a question' and he wouldn't go on with the class until everyone asked a question. The questions were good, the answers were good and everyone had to do the readings enough to formulate a question* (Margarida).

Introduction

The use of technologies in teaching and learning has a long heritage that can be traced to the cultural invention of pictographs to record, transmit and reproduce information (Saettler, 1968). From sign writing as the forerunner of instructional technology in the 18th century to the use of the black board, the overhead projector, the telephone, the typewriter in the 19th century, and the establishment of instructional media with film, radio and television in the 20th century, many communication technologies have been used in teaching and learning. Adding to these, there are a myriad of computer based technologies reshaping the classroom.

Most of the academics[1] that I interviewed found it difficult to remember not using computer technologies. The use of computers as a common practice in university teaching, at the two institutions studied, started in the early 1980s with the introduction of microcomputers replacing mainframe 'dumb' (as they are called) terminals with personal computing. At this time, academics' use of the computers was almost exclusively for word processing: to prepare and update lectures, to write letters of recommendation, papers and articles. Beginning in the late 1980s and expanding in the 1990s there was a shift from using computers to write to using them as a communication device. This

[1] By academics I mean professors and students as active participants in academic culture; when I refer to professors I will say professors and when I refer to students I will say students.

dramatic change was made possible by the creation of the Ethernet system of multi-users or internal email. This is the root of Internet communication at the two universities studied. The use of computers for communication became a prevalent practice when students were provided with email access by their universities. Dialup access systems were introduced in the 1990's allowing students and faculty to use the email system from outside the university. The most recent developments have been the widespread access to the World Wide Web and Web-based servers with possibilities for using them in teaching and learning.

Following the introduction of computers and the development of the World Wide Web, a blended format of education is developing at these two universities where practices of teaching and learning have been expanding to include the use of the latest computer technologies combined with traditional instruction in the context of campus-based, face-to-face education. Undoubtedly, these technologies are becoming embedded in academic life and embraced by academics. At the same time, my study finds there is a high level of contestation that accompanies that embrace in some uses of the technologies in teaching and learning.

In this chapter, I describe the regular, everyday practices of using technologies in teaching and learning my respondents articulated, that is, in preparing, presenting and communicating course related information. I will also analyze the extent to which these practices are being contested, as well as the nature of the contestation as revealing traces of a pressured academic culture. The analysis indicates that using computer technologies in teaching and learning leads to various negotiations. Academics appreciate the ample benefits of the technologies but they also have moments of interrogation, hesitation and

uncertainty. These are moments of contestation. The perception that the technologies are being used almost exclusively for the transmission of information is a moment of contestation, as will become evident in the analysis. A struggle occurs, in many instances, because professors see the enhancements of using the technologies but at the same time question its usefulness in other ways. This tension is reflected in and shapes academic culture. The analysis suggests that the contestation is not based primarily on whether the technologies are perceived to be "good" or "bad" for teaching and learning, but rather in terms of the extent to which using the technologies modifies the comfortable processes of creating knowledge, placing significant pressures on academic culture.

Following from Bourdieu's theories of cultural production, the analytical emphasis is on the everyday practices of academics. The study does not set up a framework of regular versus lead adopters (although there are some innovators among respondents). This is a study of academic culture; it is about regular academics in regular practices, not one extreme or other of the adoption continuum. The goal of the thesis is not to compare the lay users to the innovators; it is not an evaluation of whether or not the technologies are enhancing practices of instruction and learning. It is about how academic culture is changing as a result of technological integration. This study provides a snapshot of what regular users in the academic community feel about using new technologies in their daily practices.

For the same reasons, I am working with the dominant technologies of the habitus, those that are used in the everyday practices of academics. In the interviews respondents self-selected the technologies in response to my questions. These technologies were the ones with which there was the most interaction, the ones

respondents reported a deeper engagement with. Therefore, such technologies as videoconferencing or simulation technologies, as well as students' email listservs, perhaps surprisingly, do not appear as respondents did not identify them. The technologies used are Word for preparation of course content; PowerPoint (PPT) for presentation of course content; and email, the Web and the Web CT server for communication of information and course content. These technologies are both information and communication technologies (the so-called ICTs). Word processing, PowerPoint and email are communicative in nature, whereas Web pages are largely informational in character and WebCT includes a blend of both informational (Web archives) and communication (discussion applications) technologies. Each of these technologies features several functions, including editing, management of course components, availability of course content and materials, transfer and exchange of information, discussion fora (or conferencing) and evaluation.

The technologies used in each area, and their associated functions, are described as discrete merely for analytical purposes. Each technology may encompass more than one function and vice-versa. For instance, the exchange of information function can be performed either by using the attachment feature of regular email or via the attachment feature of email on the WebCT server. Accompanying the software is the hardware required to run the software: a laptop or a desktop computer, a projector, a white board and other extensions. The potential convergence of all these technologies has been combined in the highly innovative "Intelligent Classroom"[2].

[2]This is a conventional classroom that operates in a similar fashion as a reactive video conferencing room, where presentation technologies are installed and augmented with sensors and computers for processing and controlling. For full details see http://www.cim.mcgill.ca/~jer/research/eclass

Despite variation in terms of uses of specific technologies, such that, for example, all respondents use Word and email, and most do not use WebCT or PowerPoint, the use of *all* technologies is being contested to some degree. Surprisingly, the contestation is expressed most poignantly by those who are the early adopters and most intense users, as well as the predictable "laggard" resistance to innovation (Rogers, 1995). Given the various conceptions of the relation of academic culture to technological innovation examined in Chapter One, it was equally surprising to find that there were no significant age, gender, or discipline differences in the types of uses.

The highest levels of contestation occur in the use of PowerPoint in the classroom and the use of the WebCT server outside of the classroom. Moderate, although interesting, levels of contestation are associated with the uses of email, and lower levels of contestation even surface in the use of Microsoft Word processing.

In addition to the varying from high to low levels, the contestation varies in nature. It is aesthetic, ideological, and pedagogical in nature directly relating to academic culture by having an impact on the process of creating knowledge. Furthermore the levels and nature of the contestation are independent of the intensity of use. For example, those respondents typologized as relatively heavy users (those who used all four technologies for all aspects of their teaching and learning (preparing, presenting, communicating) have similar contestation levels and of a similar nature as those categorized as occasional users (those who use only some of the technologies and only for certain aspects of their teaching and learning).

In this analysis, pedagogical contestation is an umbrella category defined in terms of practices that encompassed both the aesthetic and ideological contestations. That is,

although the two latter categories highlight theoretical concerns, they have practical pedagogical implications. Contestations in this area are associated specifically with struggles related to perceptions of whether using technologies enhances teaching and learning. The contestations do not intend or attempt to settle the issues of technological enhancement in practices of instruction and learning. The language of enhancement, and that of its deconstruction, reflects, to a degree, the expectations that have been created surrounding the technologies. Although the struggles are expressed, at times, in evaluative terms the main analytical focus continuous to be cultural. The contestations are important to the extent that in them surfaces the impetus to protect an existing notion of academic culture.

The aesthetic contestation is defined in terms of the perceptions and experiences of using technological equipment in the context of face-to-face education and the alteration of the aesthetic experience in the classroom. The ideological contestation is defined, not in terms of an unconscious or abstract apparatus[3], or false consciousness[4], but rather in terms of a rhetoric that a particular use shows itself to have implications that are obfuscated by its promotion. Ideologically, the contestations have to do with maintaining notions of collegiality and professionalism. The contestations are important not only in and of themselves, but also because they underlie aspects of academic culture that are perceived to significantly guide the decisions on technological use by academics. From word processing to using the Web to make available course materials, the perceptions of using technologies in the daily practices of academic work reflect aspects of academic culture that are either being reinforced, challenged, or made vulnerable.

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[3] As defined, for example, by Louis Althusser, 1984.
[4] As defined, for example, by Karl Marx, 1887.

Preparation of Course Content: Word Processing

Although the Microsoft Word application is not intrinsically a communication technology in the same exchange sense as the other technologies discussed here, it is included for three reasons. First, because it is used in combination with the other technologies, and to a great extent it becomes inseparably converged with them. Second, because the contestation in the use of the Word application as the software of choice for most academics emerged during the course of the interviews. Third, because despite being a universal and useful practice, writing with the aid of the Word processing application is nonetheless subjected to similar kinds of contestation as other technologies examined here.

Most professors claim that the editing features of Microsoft Word are very helpful and see the use of the application as a "great" way to write. Few challenge such a claim. A tenured professor in the Faculty of Education and the current director of the University's faculty development centre of university teaching and learning, bridging faculty and administration, Jessy started to use computers in the mid 1980's primarily for the word processing of manuscripts. She is a heavy user of this technology and contends that one of the main benefits of the application is its editing features. These allow for a flexibility that enables improvements in writing skills. She asserts that Word is an incredibly powerful tool, using it has

> changed the way I write because you can do successive drafts, you can cut and paste, you can begin with a mind dump and change everything around. It's so easy to explore variations on what the story is. You can very easily produce multiple versions and compare and contrast. So there is a fluidity and flexibility that is possible in the writing process that was not possible when you had pieces of paper and pencils or typewriters.

In the same vein Palmira, a fourth-year student in the Faculty of Engineering, uses Word and agrees that an advantage is its flexibility: "it's very easy to rearrange paragraphs. With writing it makes a huge difference; it's much easier". Additionally advantageous are the spelling and grammar features, as Palmira claims, "the fact that you can be much more precise with grammar and editing, it becomes a lot easier and faster to be able to make changes and drop and add spaces".

Some professors find that one of the biggest advantages of Word is its tracking feature. An assistant professor in the Faculty of Arts, Paula, like Jessy and Palmira, is a heavy user of the Word processing technology. She contends that,

> using a word processor and being able to take a chapter and comment on it. I love that. Sometimes I'll print it and read it once and then I'll read it the second time on screen. It depends at what level I am familiar with the work, but I think that that part of Word is a tremendous asset.

The ability to "track" in the Word processing application allows professors and students to edit documents and papers directly on the computer eliminating or reducing the need to print. Academic culture values the flexibility that the technology provides and using the technology is perceived to aid and complement existing methods of preparing course content. Respondents report a great appreciation of these instrumentally beneficial uses of the technology.

Alongside these utilitarian benefits, the use of the application was occasionally contested aesthetically to the extent that it limits creativity, as the options it affords are pre-determined by the software program. Academic articles and papers have always had a similar style and structure and instead of increasing variety, the use of the technology replicates the established ways. Participants did not report a large variety of styles that

deviate from the standard; nor have they taken advantage of the possibilities offered by new technologies, such as hypertext or the incorporation of images. Surprisingly, there has not been a huge increase in the variety of scholarly style and structure. This can be explained by the constraints of traditional academic culture and its narrow view of scholarly style and structure.

In addition to being aesthetically contested, some respondents raised important ideological concerns regarding Word's limited options for the writing of academic essays and papers. Many of those respondents have pointed to the limited and limiting range of choices in terms of writing options that Word affords. To note the latter point, Iara a post-doctoral student in the Faculty of Arts and a lecturer, and a heavy user of the Word software, describes the choices offered by the software as limiting. She points out that the design of the Word application is of limited pertinence to academic work, "why bullet a certain way or have a particular paragraph set up? And the capital letters that do not allow you to quote in different languages, I cannot without a lot of effort use an English keyboard to write a Polish sentence; or 'I' is a separate word and I need it! Especially this is not appropriate for students in the humanities and social sciences".

Instead of increased choices, these are actually diminished, Iara claims,

> I may want to have much more liberty in choosing the organization of my numbering structure. Or in writing a letter, it has to be this way. Well this may be appropriate for the business world where the emphasis is the bottom line and where all is the same but if the idea of a university is learning, ideas, and so on, then it is not appropriate.

Despite, and beyond, the fact that it has been possible for a long time to turn off those features mentioned by Iara, she points to another, more important ideological contestation. She adamantly questions the notion that software is "smart" and whether the

anthropomorphization is appropriate in the technological context. As she assertively contends, "the so-called smart machines are just annoying, I should be smart, not the machine". Iara's comments show an important struggle in using the technology. The contention that the machine rather than the person is creative and smart is subject to a critical examination in the context of university teaching and learning. The association of software and hardware with cognitive abilities occurs not only with Word, a seemingly less obtrusive and intrusive technology, but with the technologies used for presentation and for communication of course content.

The above contestations, that is, the respondents' perceptions that using the technologies actually underlines creativity and smartness as uniquely human elements of thought that cannot be transposed to the use of the Word application, suggesting that academic culture sees these as part of the essential elements in the process of creating knowledge. More importantly, the struggle with notions of creativity and cognition in relation to such a welcomed and universally used technology as Word indicates the extent to which there is also a struggle with the vulnerability of some aspects of academic culture; and that some boundaries are being significantly defended for academic culture in the articulation of the various contestations.

Presentation of Course Content: PowerPoint

Presentation technologies such as PowerPoint (PPT) for in-class delivery of course content, while, in general, very popular among professors in the Faculties of Engineering and Science, are less popular in the Faculties of Education and Arts at both universities studied. That being the case however, contrary to expectations of disciplinary

differences, there are wide variations among and between all the disciplines in response to technologies, rendering a disciplinary analysis at the two institutions futile.

A PPT presentation consists of projecting prepared slides from the computer onto a screen that is usually place above the blackboard. The use of PPT has been popularized in business and conference presentations, and based on my respondents' perceptions its use in the classroom has lead to significant contestation, in ideological, aesthetic and pedagogical terms as examined below. Interestingly, the contestation is emerging from both those respondents who are relative innovators as well as those who are regular users.

Some professors use the application as the exclusive strategy in the presentation of course content and have come to appreciate its benefits. Paula is a heavy user of PPT for delivering course content. She started to use it progressively and suggests that novices introduce a few slides at a time in order for the experience "not to be overwhelming. What I find is that you should not feel that you have to do all your lectures on PPT. You don't have to, you can start to do a couple of lectures with PPT and then a few more slides". When she began to use the application a year ago she only used it for half of the class time but she is currently, "putting everything on PPT, I use PPT in all my lectures". According to Paula, PPT is a phenomenal program because it allows for different types of comparisons among images,

> because of the fact that you can put in one image, two images or you can put three. Typically, in Art History you put two images and do a comparison, enlarge it to show detail, you get used to that. So what's kind of interesting is to learn how to think of using a single image and having students interact with that, and sometimes doing comparisons.

While this flexibility is welcome, she acknowledges a limitation of scale, observing that,

> There's problems with the scale and it's tough to fit two images on a PPT presentation, so it's not ideal. But it's flexible, I love the fact that I can look at the slides as I'm reading through my lecture, which is something we don't have upstairs [classroom with a slide projector]

In addition to images, Paula adds text information to her slides,

> I also found that increasingly I'm adding a little bit of text as I go, so I'll put dates and stuff so that they actually see that. So, that's meant that I don't have to slide groups anymore when it's on PPT, I actually put the information about the slides on there.

Explaining that occasionally in a class where the images used are very similar, she would receive a comment on the teacher evaluations that students were often unsure of which image she was referring to, the use of PPT benefits the students by reducing this confusion to the extent that each slide can be clearly identified. As she points out, "that's good for them because they're not confused about which image you're speaking about; they know it's this one or the right one, or the one on the left". The use of PowerPoint is acclaimed because of its flexibility in incorporating images. This flexibility is appreciated by academic culture's valued autonomy in deciding what materials to use in presenting academic material.

While Paula perceives that the use of PPT does not impede classroom interaction in a technical sense between professors and students because the light of the projection is sufficiently good avoiding turning off the classroom lights, she contends that,

> there is a side to it and I think it's going to be a real problem in that it takes away the interaction that goes along with the slide room. And I notice that increasingly I never go into the slide room anymore so I rarely talk with the slide librarian and I don't have a lot of contact with my colleagues. I almost never see them.

Ambivalently adding that, on one hand technology is increasingly "chaining us to our desks" and on the other hand, there is a relentless drive to keep using technologies "you

kind of keep wanting to go". Her last statement indicates that the will to use new technologies is an important driving force. It should be noted that Art History professors have traditionally used slide projections in their presentation of course content such that the implementation of PPT slides does not represent a large shift in pedagogical uses. Slides are therefore the technological antecedents to PPT in a classroom context.

The ambivalence and contradictions in Paula's comments indicate that the use of the technology may influence the continual development of collegiality (highlighted by Bergquist (1992)[5]), being more conducive to the formation of a culture of individualism. This is an important ideological contestation where the notion of being "chained" to our desks alludes to a lack of agency in maintaining important aspects of academic culture, such as face-to-face interaction and collegiality. At the same time that academics appreciate the various benefits of using technologies, they also indicated some struggles taking place. One struggle is that, academics acknowledge the usefulness of the technology in being able to expand the range of visual aids used on the classroom while at the same time perceiving a reduction of face-to-face interaction, which is an essential element of traditional academic culture.

Some academics are critical of the uses of the software and voice their need to underline what they consider are often neglected issues. Specifically, the extent to which an exclusive reliance on its use may reduce or restrict the opportunities for teaching and learning. Iara, an occasional user of the PPT application, expresses this criticism by relating her ideological contestation to the professionalism expected in academia (and emphasized by Clark (1983)[6]). The amount of time it takes to set up at the beginning of a

[5] See discussion in Chapter One, p.14
[6] See discussion in Chapter One, p.9

presentation, Iara claims, can be considered unprofessional. It can take five to ten minutes to set up the presentation: to hook up the laptop to the projector, and to connect to the computer files and for these to be displayed on screen. This also means that in preparing for the class one has to consider the time it will take to set up the presentation and design accordingly. For Iara, a more annoying issue is that the interface is constantly visible by the audience, where opening the computer shows the personal desktop projecting on the screen, making it visible to the students. "Then you go get the file on your hard drive and this shows your files, how you structure them, and so on for all students to see". She contends with a sense of amazement that the visibility of the interface is unprofessional,

> I do not want students to see my screen saver, the way I organize my files. It should go directly into the picture that I want to show, or the image I want to show, when I want it. This would be like putting on my shirt as I am entering the classroom, or tucking in my sweater. Students or colleagues at a conference presentation would think this in unprofessional, but yet we show our desktop, which is highly personalized.

The visibility of the personalized computer to screen interface implies a de-previtization of space. This is important because academics think of their computers, especially lap-tops, as personal. This has implications for when the personal computer is taken into the public space of the classroom. The integration of the personal computer into the classroom confounds the boundaries between private and public space that may be part of traditional academic culture.

Contrary to Paula's praise of the luminous, Iara claims a preoccupation with the use of PowerPoint, which in most classrooms necessitates that the lights be dimmed and the extent to which this may reduce the opportunities for interaction with the students as the focus is on the screen rather than the interaction between professor and student. Iara

laments that, "I do not see where I am going with my slides. My screen should show some of my notes and the sequence of my lecture, NOT the show"[7]. While the slides can be seen on screen as Paula contends, Iara points out that it is not possible to see the sequence of the slides without the students seeing it also, "they will inevitably see one or two of the further slides that I wanted to show in a particular sequence". In frustration Iara exclaims that,

> the light business is useless: for the 'show' I have to lower the lights, which means I cannot consult my notes. When I am using my laptop, at least glare is not a problem, but this does not give enough light to read notes. Seminar rooms are not equipped with extra light by teacher's desk. Big lecture rooms are, but those that have their built in units within the lecture, often have this strong glowing screen so you cannot see your notes anyway.

Raising the preoccupation that the constant lowering of the lights gives the class a sense of a 'show', Iara considers this a problematic pedagogical issue as the focus is on the interface, that is, on the screen, and not on the students. This lack of interaction,

> is unnerving, and un-pedagogical, because teaching should not be a show. It should appear as a conversation, rather than a techno (not) supported monologue. The light isolates the professor from the student, 'with PowerPoint I have to only deal with what is on the screen. This IS my interface'[8].

Iara's issue can be understood as one of the relation to classroom design and the teacher. Instead of interacting with the students, she feels the instructor and the student both interact with the screen, and it becomes the interface and the audience. That the interface is the audience raises issues about performance and performativity in teaching and learning where the interaction between teacher and student during a class is considerably reduced or totally eliminated when there is an exclusive reliance on PPT as an

[7] Emphasis in the original email response sent to the author after the face-to-face interview.
[8] Emphasis is in the original email response from the respondent after the face-to-face interview.

instructional strategy. Academic culture seems to require that interaction be between students and professors (and students among themselves). The interface as the audience also confounds the notion of education and entertainment, where the presentation of course content becomes a "show". This is an aesthetic contestation disclosing academic culture's simultaneous acknowledgement of and unease with notions of performance.

Many professors raise important distinctions between a business presentation and a presentation to deliver course content, revealing an important ideological contestation. A heavy user of PPT in the presentation of course content, António, like Paula, uses it in all his classes. By his own admission, António likes to experiment with each new 'gadget' and that is primarily what drives his uses of the technologies, in addition to being involved in the development and teaching of the new technologies. From his experience in using the application for the last five years, António makes a significant distinction between using PPT in conferences and in the presentation of course content and is considerably critical of the uses of PPT in the classroom. While he is less enthusiastic than Paula he is not as contesting as Iara. Like Paula he has modified his strategies in terms of using it in the classroom. Whether deleting or adding images to the text, it is clear that there are various adjustments that professors make as they gain experience in using PPT in the classroom.

Precipitating António's changes on the amount of information contained in the slides were complaints from students that the class environment was, in fact, like a 'slide show', confirming Iara's preoccupation. As António explains,

> I changed from research conference presentation to more teaching oriented presentation because I found that they [students] were treating it like a slide show and I was getting comments at the end of the semester like, some students loved it and said it was great,

> but others were saying 'we don't want anything on PPT, we want to be able to take notes on everything'. And I think of the way I respond to presentations, sometimes I want the information there, sometimes I like to be able to take notes. I found that students learn better when they are forced to take notes.

Deciding on what notes to take has traditionally been an important part of the learning process for students that is diminished with exclusive or intense use of the PowerPoint application in the delivery of course content. The students' agency in learning is restricted when the information on the slides is perceived to be the only important information. Undergraduate students are particularly expressive of the positive uses of PowerPoint as a way to make it easier for them to know what the important information is. Palmira describes the sentiment well, "we like it because the information is there and we do not have to think about what to write down".

Iara worries that, from her observations and experiences with using PPT, note taking during class has actually decreased. In addition to the reduction in note taking, the focus of the students' attention becomes the information on the slides, which is then equated with the only important content, and the oral aspects of the presentation are completely ignored. As Iara remarks,

> students are not paying attention, students only take notes when you put up something on the screen, so that they're not taking notes as you're talking. This is quite telling. Now students think that what is important is what is up on the screen with PPT. For me the whole presentation is important and what's up on the screen is just an illustration of a point or complementary, it certainly is not the whole thing.

Distinguishing between the pace of writing on the board and that of showing a PowerPoint slide presentation she observes that, "in a way it is the same with writing on the board, I suppose. But with the board the flow would be set by the pace of writing it on

and students follow along". The flow of a presentation that derives from writing on the black board is strikingly different from the flow deriving from a PowerPoint presentation. Temporality has shifted, such that it is possible to present a greater amount of information in the slides than with writing on the chalkboard. The time it takes to process and think about that information remains the same.

Contributing to this notion that the use of PPT places an emphasis on presenting content without allowing students time to process it, is Melissa, a tenured professor teaching in the Faculty of Education for twenty-five years, who continues to choose to use the conventional blackboard and the overhead projector. Although aware of the increased use of PowerPoint by colleagues and students, she claims that they should serve the same outlining of information purpose as overhead transparencies, "I find, I guess, I am used to overheads and I use them differently. I use them as outlines and with PPT you get into putting in other information, you don't have to but then 'why use PPT and not just use the overhead if you're just doing the outline'; it is simpler".

The advantage of the overhead transparencies, similar to the pace of writing on the blackboard, is that one can write as the presentation develops at the same pace as talking, encouraging thinking about what is being said orally, as well as promoting interaction between professor and student. Melissa uses the overheads as outlines, "then I write in the details as I go. For me it's a different process if I am putting it up and developing it with them, then if it's already there, it forces me to engage more with them".

A number of respondents question the usefulness of having an entire class presented in PPT slides, and more pertinently the extent to which its use can, in some

instances, reduce the opportunities for learning. Melissa describes this concern effectively pointing out that,

> if I use PowerPoint, and I see this all the time with people who use PowerPoint they are just reading whatever is on the PowerPoint slides, and I don't want to do that, I get into more discussion, give them an example and we talk about it and I write down a sentence summary, so for me, I don't think I'll use it, not just for the sake of technology.

This is an issue if course design as much as it is of the technology, however, she reiterates her perception that the use of PowerPoint is an impediment to learning when it is used for its own sake reducing the opportunities for discussion and class interaction, "I guess I find the interactive part really important and I find that PowerPoint takes away from that. I guess it doesn't have to, but for me it would, so I don't use it".

The struggles, embodied in António, Iara and Melissa's comments are: the extent to which the heavy use of the technology to deliver course material contributes to the primacy of the written over the oral aspects of teaching and that a heavy reliance on the technologies can lead to a reduction in interaction, highlight the importance of oral and interactive aspects of academic culture. While Iara is an occasional user and Melissa does not use PPT at all, Margarida, like António, is a heavy user of PPT, and has been using computer mediated technologies for more than fifteen years. A professor in the Faculty of Arts who teaches Web design, and uses presentation technologies (including PowerPoint), she was awarded a research grant from the Networks of Centre for Excellence program which has allowed her to, for the past seven years study interfaces for distance learning in association with Télé-Université[9] a distance education institution based in the city of Montréal. The issues raised by Margarida are similar to Iara and

[9] See WWW.teleuniversite.qc.ca

Melissa's pedagogical contestation. Her perceptions of the technology are especially poignant given her combination of experience and research in the uses of new technologies for learning, not only PowerPoint but also the Web CT server and Web pages, as will be discussed in the following section. She agrees with Iara reflecting that there are significant pedagogical concerns when using PPT in the classroom exclusively or extensively. She remarks that while students listen to the professor, they perceive the only important information to be on the slides, agreeing with Iara's concern that students limit their note taking to what is on the screen rather than focusing on the entire presentation.

Margarida points out that many students tend not to pay attention when PPT is used in class and therefore do not recall later what was the information behind the slides. "Well they listen to you, but when they go back to the PowerPoint they don't remember very often what was behind the points". As she perspicaciously remarks,

> if I use PowerPoint too extensively, it's very dull. It's very difficult for students, they just go back to sleep. So I have to mix, a lot of exercises in between. I cannot use PowerPoint all the time. In fact, it is a good question: how long can you use PowerPoint before you start to ask something from them?

In order to attempt some balance, she occasionally prints a copy of the PPT slides for the students and this allows them to add their own notes and explanations. Many students at the undergraduate level expressed an appreciation for the availability of PPT print-outs. Some point out that, having access to the PPT slides (either as a hand out during class or by making them available on the WebCT server prior to class) allows them to focus on the oral information being presented during class. As Gabriela, a first year student in the faculty of Arts explains, "with a print out of the slides then I can add my own notes as the

professor talks, so that I can actually pay more attention to what he is saying during class". The main strategies used to deliver the course content continue to revolve around the conventional face-to-face, in-classroom interaction.

Other students point out that in conjunction with making the slides available on the WebCT server, examined in the following section, they do not need to physically go to some classes. This tends to undermine the importance of the classroom where having access to the technologies can replace attending the class. Therefore, while for some students having access to the PPT slides means that they can focus on the oral aspects of the class presentation, for others it fully replaces class attendance.

The struggle is that a reliance on PPT as the exclusive method of presenting course content is perceived to lead to the replacement of human interaction. This is a moment of contestation and struggle because interaction is important for academic culture to be maintained and (re) produced. The creation of knowledge as a human activity is perceived to be protected in these struggles.

An interesting issue was raised by the respondents concerning the idea of time. Iara is concerned with the amount of time involved in preparing the multimedia presentations, questioning "how many of us can spend time to prepare each lecture in Flash?" Margarida reiterates the issue of the amount of time it takes to enrich a presentation using the software,

> it takes time when you prepare. It makes, in fact, the only thing is it's very long to make the images the right size and integrate examples and these are important. You have to change them often and make, (I just got a scanner it's at home because that's where I finish preparing all my courses), where I can take a picture and scan it and add it to the PowerPoint. But it takes time to just enrich it.

The struggle with time highlights the extent to which there is a shifting workload of the academic and academic life towards increased work time, startlingly contrasting with the notion of labor saving technologies. Professors' expenditures of time in preparing the presentation of class content can reduce the amount of time available for interaction with the students, as well as for other areas of academic work. It is the respondents' perception that the use of technologies actually increases, rather than alleviates, the workload and time constraints. This perceived subtle, yet pervasive, shift towards an increase in the work load of academics can also be seen in the increased amount of administrative tasks that academics are performing because of the implementation of other technologies such as email and the Web, further analyzed in Chapter Four.

For some professors and students using the PowerPoint application enables improved organization of the content of the course. According to Margarida, the students appreciate the use of PowerPoint because it provides an organization of the content. As she contends, "they like it a lot because they have problems organizing the information in their minds and if it's written, of course the PPT is not detailed it's only the main points, when they see it on the page they understand it". It aids professors (and students) to organize "especially for me, I jump from one point to the next, so it forces the teacher to follow, to prepare a very organized plan to see what I'm going to say, to see what's missing, to incorporate this or that and to keep it from one year to the next, and it's very useful"[10].

As mentioned, most undergraduate, entry level students agree with this perception contending that the use of PPT in the classroom allows them to focus on what is

[10] Interview was conducted in both French and English and this quote was translated from the French by the author.

important, that is, what is on the screen, rather than having to "figure out what the professor is saying", as Gabriela puts it, for themselves. This 'figuring out', however, is part of the learning process, many other respondents point out. Thus, the perception that a heavy reliance on the use of PPT in the classroom might cloud students' learning is another moment of contestation.

Many professors and students who do not use PPT report a sense of pressure to use it as a component in their teaching and learning, based on the assumption that using the latest technologies is intrinsically enhancing. There is an implicit assumption that equates the use of new technologies with intellectual sophistication, which is being challenged by Melissa, as we have seen, and other professors and students. Isabel, for example, contends that there are many cases when using it actually detracts from the quality of the presentation.

> It takes away from a richer presentation of the material and a more complex presentation of the material. I have also seen it well done. But sometimes there is an assumption that it is always better if [PPT is used] and that is clearly not the case. So I think that the thinking behind the integration of technology into pedagogical or research based practices is essential, and I don't always see that.

Articulating Isabel's comments at the experiential level, João, a Master's student in the Faculty of Arts who has not used the PPT software, observes perplexed at the extent to which many students use the PPT application in their class presentations, and the extent to which this use is perceived as inherently enhancing. In one of his courses "everyone else had digital slides and used PowerPoint presentations while I used the blackboard. Even though I felt my presentation was as rigorous as anyone else's, I felt that my presentation was not taken as seriously". This defines and measures the quality of the presentation by the technologies used, reiterating the students' perception of the

primacy of the technological over the human and, to a degree, the equating of being knowledgeable with using technology.

In addition to the ideological, there are important aesthetic contestations. In a class presentation, Iara used the application to make the point that overheads are just as effective as a computer based technology, and in order to "get students to think outside technology". She strongly claims that PPT, and most Microsoft applications including Word, are replete with aesthetic design limitations that are nonetheless tolerated by many academics. According to Iara, the use of PPT may be appropriate for business content and presentations where what is said orally is exactly what is on the slides, but it is inadequate for the classroom because it limits variety. "PPT makes all presentations the same, another yellow font on a blue background, or the same clip art, and noises, there is some choice but it is predetermined and it is all the same for everyone who has the application".

An additional limitation respondents identified in relation to classroom design is how cumbersome it is to use multimedia in the classroom,

> I cannot easily do "multi-media" and use a blackboard when fancy strikes me during my talk. The screen typically covers the blackboard. Slides are displayed behind you. The screen should be set diagonally, so as you can see the projection without turning your head 180 degrees. To use the blackboard you have to raise the screen and switch the lights back on. I find it hard to integrate other materials within the presentation. It is perfect for pre-prepared sleek presentation, but that means transferring all 'multi-media' needs into your slides: huge job and PowerPoint is not helpful with this. It is too static.

Iara finds it disturbing and somewhat intriguing that often the technology, instead of the content of the course, is the driving force behind the design of the presentation. For Iara this is limiting, "the design of your presentation, class, whatever, is limited by what the

technology can do". She adds that this happens with non-computer technologies as well, such as the overhead projector where the acetates are not "exactly the size of a 8x11 page, landscape or otherwise, the sides are rounded and no page is rounded, so when you are showing an image you can't show a complete picture, if you want to show the full image you can't and that is limiting". She questions the reasoning behind the continual creation of limiting designs. One possibility is that the targeted sector at the genesis of technological developments is business only subsequently being adapted to education.

More importantly, Iara highlights that the aesthetic limitations lead to important pedagogical concerns. The software is designed and programmed "go to sleep" if not being used after a pre-determined amount of minutes, such that "as you are presenting, the computer goes to sleep, and then the projector goes to sleep". The PowerPoint application also requires that the slides be shown at a pre-determined pace, which can be set by the user but cannot be changed during the presentation. As Iara points out, the set pace makes the presentation flow

> quickly, you cannot linger, or have longer times of display while you discuss material verbally. The system is smarter than I am and will take a nap as I'm presenting and then the projector goes to sleep because it is designed and programmed that way. It takes a while to wake it up and while I am doing that other slides may come up in response to my mad clicking.

She emphasizes, concurring with Melissa's position, that using PPT alters the presentation and that these limitations interfere with the "flow" of the presentation thereby reducing the opportunities for enhancement of learning; "it is very limiting because it can break the rhythm and flow of a point as you have to stop and go wake it! It breaks the presentation and the meaning of the point and it dis-enhances learning". Although the software makes it possible to set the pace at chosen intervals, the issue not

raised but implied in Iara's comments is one of learning how to use the technology to its full potential. This requires an understanding of the processes in which academics learn how to use the technologies. The perceived lack of technical support for carrying out routine academic work is examined in Chapter Five as part of the lack of agency in deciding on matters of technology.

The perception that interaction is important for academic culture to be maintained and produced; the perception that a heavy reliance on the use of PPT in the classroom might interfere with students' learning; and the perception that the technical design leads to pedagogical limitations are important moments of contestation. These moments are important because in them respondents describe the established pedagogical practices and believes. The notion that using technologies may be stirring those practices and believes serves to perpetuate traditional academic culture.

Communication of Course Information

Technologies used for communication of course information outside the classroom include regular email and the WebCT's communication feature, which includes email, chat environments, and discussion forum and course Web sites or Web pages. These technologies are described in ascending order of contestation, where the lowest levels are in the uses of email and the highest levels are in the uses of the WebCT server. As with the technologies examined above, the contestation relates to the extent to which the use of these technologies is perceived to reduce the opportunities for learning and to alter academic culture ideologically and pedagogically, evident in various moments of contestation. For example, the questioning of the extent to which communication is

reduced to the transmission of information. The contestations of using technologies for communication outside the classroom reflect an awareness of the vulnerability and a consequent hesitation for attempting to maintain the existing boundaries of academic culture.

Email

Despite the universal use of electronic mail and an equally universal assumption of unchallenged acceptability, significant reticence has surfaced in my respondents' comments regarding its use. In fact, some respondents report a great deal of uncertainty surrounding its ideological status as a communication device and as a pedagogical tool, which disturbs academic culture in important ways, particularly, with regards to collegiality and autonomy in structuring academic work.

All respondents are heavy users of email. For most professors email has changed academic life in several positive respects, from basic communication, in allowing for easy exchange of information and enabling work across distance, to being a memory device. For Isaac, an associate professor in the Faculty of Arts and chair of the program, of the technologies addressed in this study, email has changed academic life the most. As he remarks, "email changed things the most. The ability to email has made me more efficient. To write is slower than to speak, but it has given me much more control on how to handle information". He adds that the ability offered by email to maintain records of the messages sent and received is extremely useful: "very importantly, I have a record of every email I have sent where as before I could not record my phone messages". By his

own admission, he is someone who tends to forget and these records serve as a memory device allowing him to become

> more consistent with myself and to remember things. I read a book, write some notes then I might forget about them. My dream is to have everything on my laptop so that I know that it is there and I can search for it, a lot of little details rather than have to remind myself or remember where I filed it, just that it is there and I can search it. It is a memory device.

For Isaac, practices of exchanging information changed with the universal use of email and email listservs between academics because it made it necessary to use computers, "without computers you would be out of the loop, you did not have to word process you could type, but it is the Internet, email in particular, but also library catalogues, etc.". This is a recent change in the dominant medium of communication among academics, as Isaac observes in relation to departmental notifications. "Five years ago we felt that we could not send out memos over email because they would not be official since we could not assume that everyone had a computer. Now we can insist that we can post notifications on the list and students will check it". The use of departmental and institutional email listservs has become a standard practice in the last few years in most departments at both universities and students are required to activate their institutional email account without which they would be essentially "out of the loop", as Isaac posits. The replacement of newsletters, pamphlets, memos by email messages although not yet total is certainly increasing, and the assumption of universal use of email inevitably links computer technologies to academic communication.

Listservs are also used by students to share information and exchange ideas. A doctoral student and instructor in the Faculty of Education, Tommy observes that the student listserv in his department is used to share information "we have a list serve for

our grad students for exchange of information from the department to us, or if I find something and article or announcement that I think might be of interest to people I'll send it on the list to colleagues, calls for papers, that kind of thing". This exchange of information enhances collegiality and supports the development and sustaining of academic culture.

For some professors, using email has produced some welcome pedagogical changes. Isaac welcomes and appreciates the potential to communicate with shy students who would not otherwise speak face-to-face with the professor.

> I find that I now have different types of relationships, before, after class, students would ask me questions and I would answer and go find things, now a lot of that is done through email. I find that I have a lot of different correspondences with students, a shy student in class who never says a word and now we have an exchange of three or four emails a week and we are having a kind of conversation which does not require the student to speak in front of the class and be judged by the colleagues, so there is a kind of closeness that you get that overcomes the fear of making a fool out of yourself in front of the others.

The intermediality of email correspondence allows for disembodiment, and this in turn permits shy students the sense of 'closeness' Isaac refers to. For some, technological intimacy is becoming a part of academic culture, a kind of virtual collegiality. In this case using technologies maintains and reproduces a face-to-face academic culture.

In terms of communication among professors Isabel typifies other respondents' ambiguity. On the one hand, respondents claim that their academic relations have not been "un-socialized", on the other hand, the nature of the relations is weaker than that in face-to-face interaction. Remarking that using email and listserves has not 'de-socialized' the relations with colleagues, Isabel contends that,

> I have not found that there are boundaries and that we don't see each other anymore, I certainly have not found that, it is a collegial environment and when we need to speak to each other we will and/ or email but it has not de-socialized or un-socialized those relationships at all.

At the same time she observes that, "what is not as strong is the interactions you could have". There is an implicit superficiality of relations being acknowledged in Isabel's comments. Despite the changing depth of relationships, Jessy acknowledges, as most participants do, the usefulness of email for administrative interactions pointing out that "it saves a ton of time not to have to meet people".

Most professors are not concerned with the possible lack of interaction when relying extensively on communicating through email, but many express concerns about the extent to which technologies can reduce face-to-face contact. Agreeing with Isabel that mediation leads to weaker forms of interaction, Jessy observes that, "I think it reduces the potential for face-to-face contact, so that piece I find a little bit disruptive". She estimates that email tends to be over used in the local context making it "less compelling in that sense". Both Isabel and Jessy echo the concern of many professors that the overuse of email will lead not to a reduction in face-to-face interaction, but to weaker forms of interaction. As Jessy contends,

> I think it is probably over used, I find is that because email is there we do not have a face-to-face conversation which would clear up or resolve some issue very quickly. Instead, there is endless back and forth and not really being able to clear up what the problem is or not being able to because it requires negotiation and you can't do that in a asynchronous way when no one is naming the problem and trying to resolve it. So it puts off in some cases, important decisions which could be resolved if people talked with each other.

Declaring that extensive use of email often means that there is less talk between people who are in close physical proximity where "we end up sitting in the offices next

door to each other and sending emails". The struggle in this case is with the perception that an over-reliance on email for communication results in weaker forms of interaction and decreased face-to-face encounters with those in close proximity. This can potentially reduce the collegiality aspect of academic culture in important ways, where the email exchanges are not complemented with physical conversation, and where the exchanges are rather economical adding a level of impersonality to the interaction.

An associate professor in the Faculty of Arts whose area of research includes the study of networked communities, specifically "knowledge communities" that use computer mediated systems such as the WebCT server and other conferencing systems, Raul comments that, "I use to write and write, but I am learning how to become Canadian so sometimes I don't answer, or I try to be very economic in my reply. I'm just imitating what the culture is". This economy in email messages is different from a face-to-face conversation altering the collegiality of academic culture and the patterns of communication.

An interesting contention surfaced with regards to the use of email, that of its unclear status as a communication device. Some students speak of the uncertainty of email correspondence in terms of its formal hierarchy. Iara describes it this way,

> it is not a formal letter, but can be formal. You can send a formal email and get a casual response, so the status of the correspondence is not as clear as people may think. Email, it's more casual, you can write a formal letter and receive a casual reply. There is a potential for misunderstanding, one person thought that email was the fastest way, the other person thought the phone call was the appropriate way, but a call on Sunday would have not been appropriate. One side was offended because email was not appropriate while the other side thought the email was not responded to. Both sides are assuming things without taking the possibility to see what the misunderstanding was - something no one talked about.

Similarly highlighting the uncertain status of email, and despite claiming that email has not changed his relationships with students or colleagues, Raul observes that there is a peculiar uncertainty about email communication,

> I don't like very much e-communication, that is, communication that is totally online because I learned that when you communicate with colleagues in research, or with friends, sometimes you misread what the people are saying, you start thinking things that are not at all what the reality is, sometimes they are, so you get anxious about it.

According to some respondents, Email communication can simultaneously create anxiety and uncertainty. This uncertainty is perceived to be a positive aspect of using the technology to the extent that it might break down some of the hierarchies and boundaries within academic culture.

Despite the unquestionable benefits of serving as a memory device and of increased possibilities for communication by shy students, there are interesting ideological concerns about the use of email, namely its uncertain status as a communication device. Additionally, an important pedagogical contestation surfaced in the expectation that students use email as the preferred mode of contact with professors. The assumption of email communication, combined with the potentially reduced attention being paid to orality when a class is presented intensively or exclusively on PPT, has lead to changes in the nature of the interaction in class. Specifically, in terms of creating or augmenting the perception by students that email can be a replacement for participating or asking questions during class. As discussed below, this pedagogical contestation is further exacerbated with the use of the WebCT server.

António was one of the first at his institution to use email as part of teaching. As an early adopter and a heavy user of new technologies he concedes unarguably his high dependency on communication through email, "I guess like everyone I have become totally email dependent, and I find that with students if they have a question I ask them to send me an email". Similarly, José Luis, a tenured professor in the Faculty of Science, encourages students to reach him through email, "I now tell the students in my courses that the most effective way to reach me is through email".

Related to a tacit requirement of email communication among academics, there is an implicit expectation of immediate response. As Isaac remarks,

> some professors may complain that the work load has increased and that they have no time of their own, and I could have two accounts, one here one at home, but it is a balance thing it increases work in many ways and not others. I think people forget what it was like to answer the phone calls or to walk down the hall and ask the secretary for the phone messages, who really was basically an operator.

For many academics, however, instead of immediacy they are finding that with the increase in email correspondence they are setting boundaries around their responses, and expected response time. As José Luis points out,

> nowadays if you want to get an immediate response the chances are you pick up the telephone because people have too many emails and they don't reply, or they don't reply for twenty-four hours so that immediacy is gone. In the old days, when very few people used email it was immediate. The physics community, we were one of the groups who pioneered that kind of communication and in those days it was wonderful because indeed it was immediate. Now it is a form of communication among many and one could list just as many disadvantages as advantages to email.

Students concur, as João states "of course, if professors get inundated with e-mails so their response is delayed, then resorting to only emails is not too smart".

Highlighting and contributing to the perception that email communication has increased to such an extent that it has become unreasonable to expect an immediate response or a detailed or in depth response or any response at all, many professors have "email policies" for their students. An example is J.J.'s email policy. He is an associate professor in the Faculty of Engineering who uses the WebCT server, the Web, and PPT and has combined these technologies in his research to create the Intelligent Classroom. He has found that in order to deal with the email 'traffic' he has set up a policy of a one-week response time, after which he will likely not respond. He states this policy on his Web site, which is worth reproducing here in its entirety,

> Although I do not share their first name, I have been inspired by two great scientists -- Donald Knuth and Don Norman -- both of whom have managed to free themselves from the yoke of email. While these men are priviledged to have administrative support who handle their electronic communications, many computer professionals, such as myself, who read and respond to our own email, find ourselves spending an inordinate proportion of our time dealing with this task. For some, email becomes an all-day activity, in which the "beep" of every incoming message interrupts one's current work, demanding immediate attention, as the recipient has, by now, come to expect a reply within a matter of minutes.
>
> It is all too common to find computer users at conferences lining up outside Internet cafes, desparately waiting for a fix -- not of caffeine but of a new batch of email. In the evenings, rather than relaxing with our friends and family, many of us need to "sign on" to check if there's anything needing our immediate attention. What is wrong with us?
>
> No doubt, there's a wide body of literature from contemporary sociologists who explore the myriad facets of our email addiction. If I had some spare time, I would have read some of this work by now, probably on-line! While it is easy to relate to the stress of a steadily growing "inbox" and the fear that the world will collapse if we don't respond to every one of those messages within some unspecified "email etiquette" time limit,

> I for one am saying "enough". I suggest that it is time for us to reclaim control of our lives from intrusive technology and the obvious starting point for me is email. As such, I provide here, my email policy:
>
> - I check my incoming email at most once per day, usually in the morning, and then turn it off.
> - Since I receive anywhere from 20 to 100 messages per day, I cannot read every one in detail and will likely respond to very few.
> - If you have not received a reply from me within about a week, you probably will not receive one at all. This does not mean I don't value your communication, but am simply overwhelmed, and this is my coping mechanism[11].

These comments are interesting because J.J. is a pioneer in developing and promoting the uses of new technologies in teaching and learning at the University and in crating the highly innovative Intelligent Classroom. It is striking that he refers to email as an "intrusive" technology and that he is explicitly trying to "reclaim" control from the technology. This is more than unspecified email etiquette, the 'chain' notion reified by Paula[12] re-emerges in J.J.'s words.

Other professors have a shorter response time of twenty-four hours being what they consider a reasonable expectation for responding to their email messages. Regardless of the policy and the response time deemed reasonable according to an unspecified consensual agreement, the mere existence of the "email policy" reflects the perception of a sense of loss of control over the structuring of the academic work because of increased use of email. This perception of loss of control over certain aspects of academic work contrasts with the notion of academic freedom highlighted by Metzger (1987)[13] and it is resulting in the development of specific new practices to deal with it.

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[11] Spelling mistakes in the original Web site (www.cim.mcgill.ca/~jer.welcome.html).
[12] See p.56
[13] See discussion in Chapter One, p.5

Instead of immediacy, now there is an assumption not only that email communication should be economical but that it is acceptable not to reply to email messages in an unspecified timely manner. Increased reliance on email correspondence leads, in many cases, to an increased probability of no response reducing the potential opportunities for it to be pedagogically pertinent for many students.

A residual assumption still remains that email is the fastest way to communicate with professors, and, in fact, it has become the privileged way of communicating between professors and students, and between the department and the students. Confirming the professors' expectation that students communicate with them in the first instance via email, for Palmira email is the most efficient way in terms of communication with professors. As she remarks, "it's better that they have email because a lot of them are really busy with their research and other things that you can't really find them in their offices". She concedes that using email may be the most efficient way to contact her professors, "for the most part they are really good at responding to email within a day or so". At the same time, however, Palmira cautions that for queries that require explanation the use of email is not appropriate, "as long as you don't have a question that needs explanation then you go see them in person. I would go and see them if there was no email but it's just easier this way. I don't have to wait for their office hours".

This is an interesting observation as professors have office hours in order to structure work time. The increased use of email communication and its convergence options leads to a change in the structuring of academic work, as mentioned, to such an extent that there is a corollary expectation that academics are adopting a 24-7 model of work. However, it is clear from the contestation in the form of email policies devised by

many professors that academics are not embracing such a model of work, but they are acknowledging its possibility with increased use of the technology.

In terms of communicating with students, although recognizing that there might be some exchanges of information through that medium, José Luis finds that,

> it is much more difficult to interact with the students in a meaningful way when one is at arm's length, it is in many ways similar to doing something like that over the telephone, which used to happen. Students would phone and say I can't do the problem, can you help me, and on the end of a telephone is very hard, you have no clues from body language, you have no ways of saying 'show me'.

Respondents perceive that, in some ways, the requirement of using email has a irresistible effect on learning as it leads to an increase in the number of email messages from students with questions. Professors are finding it troubling that, not only the number of messages is overwhelming, but that as many as half of the messages they are receiving are from students. This is seen as an indication that, similarly to the use of PPT for the presentation of content, students are not paying attention during class and they are not asking questions in class. This implies a perceived reduction in the opportunities for interaction between student and professor during class which is paramount for academic culture and the creation of knowledge.

Isaac points out that a concern that is emerging as email correspondence increases is that email is seen as an appropriate means of sending course papers and essays rather than physically dropping them off in the professors mail box, "now you also get a lot of students writing papers at the last minute because they know they can send them as an email attachment five minutes before the deadline". Accordingly, students are not only refraining from asking questions during class, they are also delaying writing their papers

because using email gives them the illusion of having an increased amount of time. In fact, the perceived freedom from the structuring of conventional time turns out to lead not to a kind of 'free' individual structuring but to a delayed structuring. Again using the technology is altering the structure of academic work, affecting the decisions on when it is appropriate to begin working on course papers.

Some students tend to also write differently via email. As Tommy ponders students "seem to write very differently. The students with me are much less formal when they write via email". More importantly, he has found that the quality of the work submitted by email seems to be inferior, "if they submit something via email it won't be as high quality as if it's hard copy". He conjectures that it is likely an intrinsic characteristic of email communication that renders formality vulnerable to being absorbed by the intermediality, "it seems that email absorbs a lot of the formality that would be present". The de-personalized nature of the interaction contributes to this lack of formality, he feels.

The convergence between the Word tracking feature and the email attachment feature is described by most respondents as highly convenient in that it allows for easy exchange of information. Email also allows for easier exchange of course information between students. The attachment feature of email allows professors to be able to work with graduate students who are not on campus. It allows, additionally, for collaborative research among colleagues. Students use email also to do collaborative work. As Palmira points out, the exchange of information between members of the same group or communication between peers is the main benefit of using email. As she declares,

> it's easier to get information especially when you're working on group projects, if you have your part done you just email it and

> people continue from there, it's very easy like that. Especially this one project we had, we formed an email group where anything that happened we sent an email and everybody gets that email.

Through offering new techniques and opportunities for collaboration, the technology enhances the collaborative spirit of traditional academic culture. This notion of collaboration indicates a change in academic culture where the use of technologies is leading to increased collaborative research among colleagues. Collaboration is defined in terms of exchange of information via email. Although convergence is highly convenient as it allows for easy collaboration, according to my respondents the actual collaboration is occurring in the activities outside the technology and subsequently transmitted via the technology. Defining collaboration in terms of easy and fast exchange of information via email precipitates dependence upon the technology.

Some professors, point to the importance of distinguishing between the academic status of the students, which in the Universities studied is related to the size of class enrollment, such that junior status tends to be associated with high enrollment in entry level courses and senior status with lower enrollments. Whether students are at the graduate or undergraduate level of education affects the amount and kind of interaction that is reserved for email communication. At the graduate level, the class size and seminar instructional format generates fewer occasions for the use of communication through email where face-to-face meetings continue to occur with assiduous regularity, and email communication is reserved for administrative aspects.

The size of the class influences communication between professor and student, such that in a class of more than one hundred students it is assumed that a great amount of communication is taking place through email, as it is impossible to see all students

individually. Students in large classes are the acclaimed beneficiaries of the technologies, which can be used as a possible solution to increased enrolment. The issue, however, is the unbalanced ratio of students to professors and assistants and in large classes the professors will receive greater number of emails resulting in email policies that defeat immediacy and the 'just in time' benefits of relying on email correspondence.

Admittedly a minor concern, although not without significance as it relates to the amount of time spent reading and responding to email messages, is the imposition of 'junk' email. According to José Luis this is the biggest disadvantage,

> the existence of junk mail with which we are all inundated. The systems managers here (in the faculty of physics) spend a ridiculous amount of time finding ways to stop that stuff from getting into our email boxes with only limited success. On the commercial side it is a plague, so there is a real disadvantage if you have to sort through that stuff everyday to discover that may be not every email massage is of relevance to your work or even your leisure.

The importance of the existence of junk mail relates to the time spent checking email.

An academy-wide mandated and adopted practice, the use of email is nonetheless being subjected to considerable contestation, particularly the uncertainty surrounding its status as a communication instrument and its potential for delaying student thinking and reducing interaction during class. Academics welcome the benefits that email offers and it has become a useful and indispensable practice. At the same time, respondents report important struggles evident in the perception that the benefits of using email tend to center on transmission and exchange of information. Associated with these benefits, there are reports of added time spent on new tasks created by the technologies. In other words, a lot of time is being spent on transmitting and exchanging information rather than on the more conventional ways of interacting that academic culture is accustomed to. The

contestations can be understood as an indication that academic culture is uncomfortable with the possibility of modifications to this conventionality.

Web pages and Web CT

Web pages are differentiated from the World Wide Web (henceforth the Web) courses to the extent that Web pages are used by professors as a complement to conventional courses while a Web course is exclusively online. The use of Web pages that contain course information accessible to students has been a practice of some professors I spoke with for a couple of decades. The WebCT[14] server, on the other hand, was introduced at the two Universities studied in 1998 and the analysis below indicates that its inception has been received with high levels of contestation both by professors and graduate students, while students at the undergraduate level tend to be less contesting. The WebCT server is a password protected system and offers the basic features of course content, communication (which includes course specific email, discussion forums or conferencing and chat rooms), evaluation (including quizzes and assignments), and some options to add specific features that the professor deems useful, such as individual student Web pages, for example. In each feature the professor can upload files from Word, PPT slides, or from the Web making them available to the students in that specific class. It should be noted that decisions about using the WebCT server are the prerogative of the professors. The students' agency in this regard is limited to instances where the professor makes an online activity voluntary.

[14] see www.webct.com

The WebCT server differs from a Web page to the extent that the Web page is accessible to the public and WebCT is password protected. What both servers have in common is that professors who have developed and used Web pages as complements to their teaching used them for similar purposes as the most used features of the WebCT server. Those professors who use Web pages are in fact reluctant to use the WebCT server because they see it as redundant. Confirming this redundancy, in one of the Universities the administration is requesting, and will soon require, professors who have course Web pages to migrate them to the WebCT server. This requirement is being highly contested accompanied by a realization of its inevitability.

The implementation of the WebCT server as the only institutionally supported platform has led to the emergence of contestation for a variety of reasons that will become evident in the examination of academic discourse in Chapter Four. Regarding teaching and learning the contestation in using the server stems from ideological, aesthetic and pedagogical alterations in the creation of knowledge.

The majority of my respondents have not used the server. Out of thirty-seven respondents, nine use either WebCT or Web pages, some both. Of the nine respondents that use WebCT or Web pages, three of them use WebCT heavily and six use it occasionally. Four respondents use Web pages heavily and one uses both Web pages and Web CT heavily.

Paula has incorporated the use of Web pages into her courses and is now a heavy user, "I put up things on the Web for one course, so that the Web is also part of my teaching. I also used a Bulletin Board which is something I would not do again, it wasn't one that they had access to but a student would write me an email and I would make it

public to the class or post it to the Bulletin Board". However, the time issue resurfaces with the use of Web pages and the uploading of material. She highlights that the amount of time it takes to upload and manage the files is prohibitive, to such an extent that although this activity was beneficial to the students, Paula will not be able to repeat it. As she asserts, "that was extraordinarily time-consuming and you have no support, so I don't do that anymore". In addition to the amount of time it takes, on one hand, for the professor to upload the files and, on the other, for the student to download them, the uncertain quality of the images is a significant factor of contestation in using the Web in teaching and learning. An undersized or poor quality picture, because the student has an older and less capable computer, is identical to having a bad photocopy on an overhead projector.

António, also a heavy user of WebCT for his courses, and inspired by the technological convergence achieved in the Intelligent Classroom, uses an extension board called graphics tablet. By way of clarification he remarks that the tablet is, "like a mouse pad but hard material which connects to the computer". He explains that he prepares the presentation on PPT slides and

> then I come to class and I actually have, I do it from PPT to Acrobat and I make a PDF file of the presentation and that means then that I can use this board and the annotation feature in Acrobat and write into the slide. Then the annotated version, which is saved, I put up on the Web after class so that the students can see the notes that I made during class.

For António, one of the main benefits of using this particular technology is the ease of management of the course, "I find that being able to see the students listed on the management feature of WebCT I can see who is doing well and those who are not doing well and I can easily send an email to the students". He maintains that the benefits of

using the technologies have to do with the ability they command in managing the administrative aspects of teaching particularly in large classes. As he points out, "I have one class with over one hundred students and so just the management aspect of that makes it so much easier for me to upload my slides, and so on. I'm not sure if it makes it easier for the students but for me it's easier". Unsure of how his use of the technologies enhances learning, he experiments.

> I do different things for different classes. I use it always for providing information, I have the course outlines and also my course lectures on PowerPoint and I put up on the Web in advance. I use it for quizzes as well. Sometimes I'll put up a quiz before lectures to see if they've done the readings. I use it for doing self-tests for students after class to see if they've understood the material. This semester I'm trying to actually give them graded questions as well. Normally I haven't tried doing it where the scores in the quizzes actually count. So this time I'm doing it with graded tests. And I use it as well to try to have discussions with students, but I've not been very successful.

An additional benefit is that using the quiz feature of WebCT, where students actually submit the quiz on WebCT, has allowed him to give more feedback to students then grading physical versions:

> although the sorts of things I do could be done just with a regular Web page, in terms of providing information, but to be able to do the quizzes is something that I could not do with a regular Web page. I also found more recently with those graded quizzes it is a good platform to be able to then email the students and really sort of exchange information.

The use of the technology is promoted as a way to easily provide the class PPT slides, the course outline and other class materials, which once uploaded to the WebCT server are available to the students. At the same time, as evident in the comments from António, the discussion and quizz features are used very sporadically, if at all, such that communication using WebCT is often reduced to the transmission of information.

Despite the highly technologically sophisticated apparatus for teaching and learning, this level is not matched by perceptions of noticeable changes in classroom discussions or an inclusion of a variety of teaching methods. Although António has been using WebCT as well as PPT for the last five years he has not evaluated its use in terms of increased grades or the quality of discussion in class, or any other measure of enhancement.

> In my classes I change things all the time. So I haven't been able to see, or been able to make an assessment! I did find that when I started to use the web with what I call 'pre-quizzes' based on the readings that I have assigned I did find that students were much more engaged in lectures.

He remarks that, "this is quite a lot of effort on my part to make sure that I have the quizzes ready before class". He comments on the amount of time he spends on the teaching aspect of his academic career sometimes he feels, lamentably, at the expense of conducting research. The pre-quizzes allow students to practice for exams, and the discussions are pedagogically enhancing, however, both are used either sporadically or without precise measures of success.

Additionally, while there might be some pedagogical benefits to using WebCT for making pre-quizzes available to students, as they provide an opportunity to practice, these could be made available in print at the reserve services in the library. Having these materials available exclusively online privileges those students that have the best, most unrestricted access to computers (at home, a high speed connection).

Agreeing that there are pedagogical limitations in using the WebCT server, Margarida claims that, "I try to use WebCT but I don't like it, so I don't succeed in using WebCT. I have Web pages and I have a site associated with my course, let's say you

have a course and you have a lot of URLs going with it for each class, so you just click and you can get into it". Like António, Margarida often uploads "documents that they want to access, very often I do put the PPT directly on my own Web site, but to put it on the WebCT it was harder and it's on the Web. So, I tell the students to go get it on the Web". As she asserts,

> It's the standard at Université de Montréal and the students ask for us to do like other courses but I'm telling them 'I'm teaching design' and for the students it's ok but for the teachers it's horrible. So I just gave up. It's too badly organized and you don't know how to proceed and if you stop using it for one month you forget how it works.

She has attempted to use the server, "I tried maybe three times and each of them I spent two hours so I just gave up every time. So I don't think it's worth it". Furthermore, "I think they should change something that takes so much time to learn and it's not organized for teachers to really make it easy to change the course all the time". She acknowledges that it is easier for the students, "it's fast, it's easy because whatever the teacher has decided and put it there it is easy to get it".

Margarida highlights the struggles of a system that, on the one hand, encourages the use of new technologies and, on the other hand, does not provide adequate resources for its implementation. The implementation of the WebCT server at the institution in which she works is leading the administration to require their professors to use a determined amount of megabits (electronic space). Furthermore, the administration has requested that the content of her Web site be migrated to WebCT, as mentioned. For Margarida's Web site this means that that the amount and variety (multimedia) of information that can be provided and thus available on the Web CT server will have to be reduced drastically as the space allowed in the WebCT server is less than the space

occupied by the files on her current Web sites. The limited amount of electronic space available to professors, and to students by implication, is seen by this respondent as indicative of a kind of rationalization of knowledge work that does not resonate with the goals and values of traditional academic culture.

More importantly, the concerns previously raised by the respondents associated with the use of the PPT application and email, are considerably magnified with the use the Web, and the Web CT server. Combined with the increasing expectation fostered by the professors and embraced by the students that the content of the class (such as the PPT slides and other hand outs) should be available electronically, the use of these technologies reduces the perceived need to physically go to a class. This alters a conventional aspect of academic culture, namely the perception that university education requires classroom interaction. According to my respondents, contrary to the vision that the use of the technology leads to more effective uses of the time spent in class, what tends to occur is that the availability of class content online can reduce the motivation to attend class and the importance placed on physically attending class. This is especially the case in undergraduate courses where WebCT and Web pages tend to be used the most. As Margarida reflects,

> I think that students don't go to the course because it will be on the line or they don't listen, they don't take notes or they don't understand, they don't ask questions, and then they start with a question one day before they're suppose to bring in the paper and then they realize that they don't know and they reproach us saying 'but it's not on the Web site'. Well, if it's not there you could have said something earlier and then if you had been in class you could have asked earlier.

Tellingly Margarida's comments expand Paula's perceptions concerning email and PPT to include WebCT and Web pages, that students do not listen or pay less attention in class

when there is the expectation of email communication and the student can ask questions later, or they can access the PPT slides on the WebCT server after class. This equates communication of class content with the electronic exchange of information, rather than with physical presence in the classroom with all the traditional modes of communication attendant on that.

This possibility further adds to the changes in the class dynamics, as students are less likely to be thinking about the information being presented; as Margarida points out, regrettably "it does make it possible for students to delay their thinking, and they don't have to do as much, the more information you put on the Web the more they can delay thinking about it. They can look at it later". Availability of information on the WebCT server or on Web pages, combined with the uploading of the class PPT slides, instead of freeing the student to focus on the classroom interaction it reduces the opportunities for students to write notes during class. It is my respondents' perception that, if with PPT students did not have to decide on what notes to take, with the use of Web CT they do not have to take notes at all.

At the same time, while students may have access to the information, they may have not achieved the level of understanding required to use the information; according to Margarida they, "don't listen and they don't understand everything that goes around, and they complain that everything that you said is not on the Web and it's impossible". First and second year students perceive this to be a favourable aspect of using technology, as they do not have to attend class when the notes are available on Web CT. At the same time, they are losing their agency on deciding what information is important as well as equating information with knowledge.

Reiterating the aesthetic concern regarding the lack of potential for creativity in the design limitation that Iara revealed regarding using the Word and PPT applications, Margarida also contends that the pre-determined nature of the features prevents creativity, "it's hard for us to create something. In fact it's almost impossible to create. You can download something and plug it in". Underlining that the aesthetic contestation has pedagogical implications, she reiterates the limiting possibilities for learning. Just as the technology is perceived to offer limited possibilities for professors to be creative, she adds that the use of the WebCT server is not conducive to encouraging student's creativity and interaction.

> It's not good at all for hands on and creativity from the students and this is bad. Like last night, I just asked the students 'well do some evaluation of the Web site you're designing and ask the others, present it to them as though you were strangers and have their opinion on what you have done', and they did not want to do it, they didn't want to put their hands on and have someone criticize what they are doing, or criticize others.

In addition to not encouraging student creativity, Margarida highlights the extent to which the technologies do not allow for interaction. She asserts that students "think they can learn just by looking at something and it's always perfect, but just this interaction where you get together and criticize and this is really bad". As she points out,

> It's bad in normal class, but on the Web it's very difficult for the teacher to get and give as much energy to everyone as much as that person would need, when the students in class don't listen to you, you know they didn't listen! So when they say 'I didn't understand', well, you take it with a grain of salt. I explained it and you were not listening, go ask the others[15].

The use of technologies is in fact not appropriate for deep levels of learning, "for that deeper understanding and hands on it's very bad", she argues. In addition the use of the

[15] Interview conducted in French and English, this quote was translated from the French by the author.

technologies assumes and emphasizes a cognitive rather than affective, or psycho-motor approach. Her research into mediated interfaces for learning in distance education is informing her uses and arguments about the benefits of using the WebCT server and Web pages in conventional university teaching and learning. She has found that the same arguments apply to the blended format. As Margarida observes,

> in fact what we are trying to develop is some visualization of what is happening, how many times did it take to do it, and trying to find other means for more interaction because I think that learning is both social, like if you don't listen people around you might complain so it's like you do have this judgment of the other which is lost. So it's social and it's also action, you have to act on something to really create.

A number of respondents expressed this point but she makes it more clearly, asserting the importance of the motivational aspect of embodied interaction in generating high quality education. Based on her experiences with conferencing as a component of a conventional class, she claims that it is difficult to maintain the students' motivation, "I've tried a few forums inside of my class, when people see each other every week, and well, unless you really put it in the grade and have a very stimulating activity for them to go on the Web". The implication is that most students will not voluntarily use the discussion option contained in the communication feature of WebCT, although early educational research clearly shows that discussion is highly pertinent for higher levels of learning (eg. Weston and Cranton, 1986).

Students' expectations that the content of their courses should be available on the Web have a corollary of students equating learning with accessing information as mentioned, and believing that the act of accessing automatically leads to learning. According to Margarida, many students are unable to distinguish between information

and understanding, and are consequently lead into a false sense of learning, "they think that information is understanding and it's not the same, it's not because you read it that you understand it. If you think of good pedagogy it's never the answer that's important, it's the question, it's the action, it's the situation". Unequivocally challenging the promotion of a 'learner centered' model of education made possible by the integration of Web based technologies, Margarida argues instead that, the technology may be less conducive to learning by not having the kind of interaction necessary for higher levels of learning. As she remarks,

> putting it on the Web it's really bad pedagogically because they have to ask questions. I remember the best classes I had the teacher said 'read the articles and come with a question' and he wouldn't go on with the class until everyone has asked a question, you would not get out of it. The questions were good, the answers were good and everyone had to do the readings enough to formulate a question. And this was deep into their understanding, what they knew, so it was perfect.

After fifteen years of using and studying computer mediated technologies for learning, Margarida has come to the conclusion that: "like Picasso said, computers are useless, they can only give you answers". Margarida's hyperbole exemplifies the perception of some respondents that while the use of computer mediated technologies is adequate for lower levels of learning, such as memorizing, it is less conducive to higher order learning such as understanding and thinking [16].

Margarida's own research with Télé-Université indicates that in computer mediated education the term 'learning' is highly misleading. According to her findings on how students learn using computer based interfaces the most appropriate features for

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[16] For an description and explanation of levels of learning as taxonomies of learning see *Taxonomy of Educational Objectives* (Bloom, 1956) and "A revision of Bloom's taxonomy: An overview". *Theory into Practice*, Vol. 41, N. 4, pg. 212-218.

higher levels of learning are those features that allow for discussion, just as it is in conventional classroom teaching. However, she points out that a 'discussion' online is not exactly a discussion because,

> you still miss something because I remember when I go ask a graduate student to welcome and give a talk in a traditional class on a subject, it never works because you have more knowledge than they do, so you have to have a mix of the knowledge you give and the questions they ask themselves and this has to be interactive for graduate students. For undergraduates they do have to be critical and in no way information given is knowledge understood and you cannot give knowledge, you can only give information.

Contending that the use of WebCT for discussion poses 'interesting problems' regarding the structuring of the activities, Margarida ponders that,

> It's individual versus global work, because if you would start discussion and you get all the ideas of the others, how long will the others talk of their ideas if you don't put anything on and then will everyone individually, can you ensure that everyone would be contributing and how do you check on that?

She also underlines the time constraints for the professor as well as the student, "it is the same for students, if a professor wants students to spend two hours discussing on the Web in a week then why would you go three hours in class also?" This raises an important point in using the WebCT server or Web pages as part of conventional instruction, that of considering the amount of time professors expect their students to spend on their course outside the classroom.

Pertinently, a professor who has been using WebCT since its implementation at the University and who claims a limited measure of success with conferencing (forum) is Raul, who has studied precisely how students form 'learning communities' argues that using the WebCT server poses interesting dilemmas. Like Margarida, Raul is reluctant to use the server because having knowledge of similar systems and having studied the

learning situations that might occur in those systems he is convinced that while adequate for novices it is not sufficient for more advanced users.

Importantly, Raul points out that although the WebCT server does support communication (chat, email, discussion or conferencing) "most people use it for publishing information purposes not for communication purposes". This reiterates the perception that the server is used primarily for transmission of information. He does not find the features of WebCT particularly useful, but justifies using them due to high enrolment in some of his classes where the management feature of the WebCT server can be useful to the extent that student's lists are automatically created and available within the server for each course, as also mentioned by António.

Despite disliking the WebCT interface, his expressed inclination to use other conferencing systems as part of his conventional teaching stems from his belief that there might be some potential for learning. As he explains,

> you provide students not only an opportunity to exchange but to reflect upon what they are learning - normally what would happen is they listen, one or two students in a hundred will ask a question the others are going to listen, they're going to read, or not, the college book and then that's it.

In a conferencing system, "they're going to have to apply what they listened to in the lecture and what they have read in the college book, they have to apply that knowledge and try to make sense in a practical activity of sharing and exchange. Nobody likes to look unintelligent so normally students are very serious about what they write". This activity does not inherently presume the use of particular technological environments. He maintains that,

> technology can advance professors, you can build conferences that are also active in face-to-face situations, but the difference with

> networking and electronic conferencing is that people write and people read work, and they build a thought of what the others say, so you advance knowledge, you start with an idea and then you enhance your ideas you have innovation of ideas, you have kind of a necessary, prolific knowledge building.

This knowledge building is accomplished by highly structuring the activities, as Raul asserts,

> I don't just say 'go interact', they have to work on a project, they have to define clear goals, they have to focus, they have to apply the knowledge that they are studying during the course. I don't accept that they refer only to the sources that they have in the classroom or the college book, they have to go after different sources. They have to learn how to find reasonable and credible information on the Net, they also have to go to the library and look. They have to refer and cite properly. This is a serious theory course.

Despite his purposeful structuring, he concedes that the Web based activities do not necessarily lead to learning, thus much less to 'learning communities'; "it may or may not lead to learning, the situations are uncontrollable and they give me eighty students, and I'm not perfect, and the variables are endless". According to Raul, using conferencing forums does not necessarily lead to learning, it *may* or it *may not*. While tools *might* trigger cognitive processes that are of a higher order, this exposition reveals that what tends to occur is that the use of technology is used primarily for the transmission of information. Partly, Raul's issue is one of standardization of the server rather than networked learning per se. Additionally, of my participants, there is a limited number of professors using the server. A more active group might have had different perceptions.

Although a demonstration of whether the use of the WebCT server leads to higher order learning would require research that is beyond the scope of this thesis, the

relevance of the respondents' perceptions of the lack of evidence for a positive relationship between using a Web based environment and high levels of learning suggests that using the technology is used mostly for transmission of information. This shows pedagogical issues as a source of hesitation and questioning. The struggle is that the server is praised for its use for the transmitting of information but it is not as acclaimed in the more creative aspects of academic culture. Some professors began to use the Web T server, as a component in their teaching, following the introduction of the 'laptop' research program at one of the universities[17]. Similar programs aiming at encouraging professors to use WebCT are implemented at both universities, such as small research grants for including technologies in their teaching. Referring to the 'laptop' program as "the bribery that says that if you agree to use WebCT you get a laptop" Melissa, explains that

> this year I used WebCT quite a bit. I also have taken the computer in class using the projector to show a bit of a video, but most of my movies are on video tape and there is no way I am going to convert it to digital, there is just too many, so I usually just show the video.

The notion that professors are being "bribed" into using the new technologies is irreconcilable, they suggest, with the notion of using the technologies to enhance and facilitate teaching and learning. Based on an academic culture of autonomy, professors have traditionally used those technologies at their disposal voluntarily. The use of the overhead projector or videos in the classroom is not based on 'bribery' but rather on pedagogical research on their relevance for teaching and learning. The agency on what strategies to use in and outside the classroom has traditionally been the professors'.

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[17] See www.mcgill.ca/dp-cio/spp/aca_pc_program/ or Chapter Four, p. 155 for details on this program.

Respondents perceive that this agency may be shifting with the implementation of technologies, as will be examined in more detail in Chapter Four.

For Melissa, the process of using the WebCT server has been incremental and a relatively positive one, as she remarks, "it has been very interesting, I guess I went in pretty skeptical and find it a useful tool to add, but just as a tool". Although she has began to upload the class overheads and other course information onto the WebCT server she contends that she would not design her courses based on the technology,

> I would never build a course around it. When I started I thought, after taking the two hour workshop in the Summer, I thought there is nothing I can do with WebCT that I am not already doing, but my students taught me differently. So, I didn't get into fancy stuff but I did upload the overheads before class, and I had not uploaded them before class until they told me that they wanted it before class. Some of them were printing and bringing them to class and writing notes on the print out. So I found myself reformatting my overheads for them.

In addition, she has activated the "chat" feature of the WebCT server. However, students did not use the "chat rooms". She also posted the assignments from each group, but found that students "would not check out what the other people had done". Conjecturing that these online activities were not as successful and meaningful among students because of the lack of interaction, she contends that, "I think the interaction is important, I'm going to have to play with that a little bit". Although she has attempted to use the server for communication purposes, such as the "chat room" and discussion, she has reverted to using them for transmitting information to her students, thus focusing on instrumental uses of the technology.

Highlighting that the use of the technology can be helpful to the extent that it allows for the possibility of addressing different learning styles, Isabel points out that

> people express themselves differently in writing than they do verbally, so for someone who has difficulty verbally, they can express themselves in a coherent way if they are not good in words when they are speaking, now they are writing in a different style. Is email writing the same as discussion writing, the same as essay style writing? This can be taught and discussed; it is not automatic.

Additionally, the use of WebCT (and the Web) enhances the possibility for the incorporation of visual materials to a substantial extent, and some students think and learn better visually rather than in words.

Most professors noted a vehement opposition to the Universities' decision to purchase the license to use the WebCT server. As José Luis points out, the decision to integrate the WebCT server at the University,

> I would dare to say it is not really driven by pedagogical imperatives that make sense to me. Just because you have a computer environment where everybody is, doesn't necessarily enhance the learning experience unless you take advantage of it and I am fairly confident, from what I have seen of what other people are doing, that that is not going to happen. You can post information, you can post solution sets, lists of resources and stuff. I have done that over the years just by creating my own Web pages for my students, I don't need a WebCT environment to do that.

As a physicist, José Luis has been using the Web for the last two decades and sees nothing innovative about the WebCT server. The institutional discourse examined in Chapter Four confirms his suspicions that the decisions about technological implementations at the Universities are based on economic and technical, rather than pedagogical, imperatives.

Graduate students, similarly, point out that there are instances where new technologies may actually reduce the opportunities for learning. Cindy, a doctoral candidate in her third year in the Faculty of Sciences, has had a class where the professor required that the laboratories be conducted online. She gives the example of an exercise

in one of her Chemistry laboratory sessions to illustrate her point that students learn best when they are given opportunities to experience physically with the instruments. The laboratory assignment requires students to analyze how the instruments work, and Cindy points out that, "the students tend to learn the concepts in instrument design much better with the older instruments which are much more basic and easy to take apart". She regrets that technologies prevent such experimentation with the instruments, reducing the opportunity for the development of motor skills associated with experiments. As she asserts, "a lot of the new instruments are left as 'black boxes', which do all the calculations for you and spit out a number". She understands the appeal for students to the extent that the technologies are used for many menial tasks.

Most undergraduate students tend to support the use of the WebCT server, in agreement with the professors' assessments, perhaps because they are part of a demographic born and raised in the current computer era and have developed the expectation of the availability of all information, including class material, electronically. As discussed, this expectation is fostered by professors' insistence that students contact them in the first instance through email and is extended to the use of PowerPoint and WebCT. As Palmira explains, she likes WebCT precisely because it makes the class materials available online, "in the sense that it makes things available to you quickly and you can always, especially some of the courses that I am taking, he actually puts the lecture slides on WebCT, so you have access to everything". However, she regrets that,

> at the same time it gets expensive to print all that stuff, to be constantly printing. In a way it gives the Prof. an excuse not to, I mean he doesn't have to hand out anything. He doesn't even have to, some courses have course packs and they are even cutting down on that just because they can put bit by bit on WebCT. I print most of the stuff that they put on WebCT.

For most students the availability of course material online does not lead to a reduction in printing costs, on the contrary, it increases the amount of printing and therefore the cost.

From Romi's experience both as a graduate student and as an instructor in the Faculty of Education, the WebCT server has been used primarily for transmission of information. She underlines, corroborating Raul's and Margarida's contention that activities on the Web-based systems have to be highly structured and that technology needs to be considered during the course design process in order for it to be useful beyond the transmission of information.

> You have to be really conscious of the design or the way you're integrating WebCT for it to have any benefits. If you are not going into it understanding that you have to take the time to figure out and think about why you are using it, which way, what are you're expectations of the students, then you won't end up moving past the 'giving out information' stage of it which is really what happened to us. The course was never designed to have WebCT as part of it; the WebCT is kind of a 'post hoc' addition, so we really can't get any further than information providing and some of the discussions with it because we have not figured out a way to integrate it all together.

Underlining the importance of course context, Romi contends that "I can see a course where it might be irrelevant or the whole course could be based on WebCT, based on what the course is about and the type of learning they want to promote". Although she speculates that the use of technologies is creating a different kind of learning, she cannot describe this learning reluctant to call it 'lower' levels of learning. The issue raised by Romi is that both professors and students need to develop the skills to critically assess the value and substantive issues involved in the uses of the technology.

Although technologies may diversify teaching methods, professors did not report an increase in class discussions or in classroom interaction, rather, the use of technologies

seems to be perpetuating the lecturing style presentation of content familiar to most professors and students.

Respondents point out the extent to which the integration of new technologies may be detrimental to the teaching and learning process by replacing older technologies. The design of the new classrooms in the Lorne Trottier Information Technology building at one of the Universities includes data projectors (for PPT presentations) as well as the possibility of plugging in individual laptops in all classrooms. It also has four classrooms that are similar to the Intelligent Classroom having the same digital board and instructional recording technology. Classrooms of this type do not have movable chairs and desks, limiting the seating arrangements conducive to certain instructional strategies, such as small group discussion. At the initial stages of the design, António requested that the building contain a couple of relatively large classrooms with free form tables and chairs in order for the students to be able to organize in discussion group format. He contends that, "I am always very frustrated if I am in a classroom that is lecture theatre style where it's much harder to get students to interact". Similarly, José Luis prefers that the classrooms "have an old-style ceiling where you can put a hook in the ceiling so that you could string a rope with a ball at the end of it through the hook and do certain simple but pedagogically effective physical demonstrations of concepts of gravity and motion". The design of the new 'intelligent' classrooms are theatre like classrooms, which like already existing theatre-style classrooms, are less conducive to discussions or demonstrations that have proven pedagogical value. This underlines the extent to which changing the design of the classroom can have pedagogical implications.

The contestation arising from the respondents' perceptions are a site of change in academic culture. The highly contested nature of technologies reveals tensions between an instrumental notion of technology and academic culture with less instrumental goals. The contestation can also be understood in a totally different way that is not technological. One which takes us in the direction of questioning what else is going on in the respondents articulations of perceptions about the technologies. Respondents are, perhaps, disenchanted with many changes in recent years, including government cut backs to funding for education, and the amount and nature of the restructuring taking place at the administrative level, and the technologies become a concretization of discourses.

Conclusion

The technological practices of teaching and learning are described in terms of a variety of technologies troubling the monolithic notion of technology that prevails in the literature and popular discourse. What emerged from my research is not a polarization of practices between those of use technology and those who do not, or between those who have a neo-liberal and those who have a critical view of the relation between technologies and teaching and learning, but rather this study revealed varying levels and types of contestation that are a reflection of academic culture. Supporting academic culture the use of the technologies provides academics with increased choices, in terms of organization of course content for example; a fair amount of flexibility, in the integration of images for example; and more efficient official communication.

The use of Word, PowerPoint, email, WebCT and Web pages is perceived to alter the creation of knowledge aesthetically, ideologically and pedagogically in ways that reflect the values of academic culture. Aesthetically, the use of the technologies is seen to limit creativity, reducing the perception of the beautiful to technologically mediated elements of teaching and learning. The design of the technologies is also aesthetically limiting according to my respondents as the pre-determined nature of the available features constricts the freedom to be creative, thus subtly infringing on academic freedom. In addition, the use of technologies alters the aesthetics of the classroom with the cumbersomeness of multiple wires and equipment.

Ideologically, using these technologies alters the class dynamics and performance, where the professor feel their audience becomes the interface or the screen modifying the traditional ways of teaching and learning reducing in class interaction with the students. The presentation of course content is seen as a "show" confounding the notions of entertainment and education. In addition, using the technologies may reduce physical interaction between professors, and between professors and students out of class, thus potentially altering important elements of academic culture such as collegiality and professionalism. Using technologies also changes what academics perceive as utilitarian. What is deemed useful is that which is technologically convenient. Finally, by anthropomorphizing the technologies (the perception that technologies possess cognitive abilities: smart, creative) agency is directed away from the professor and the student, dwarfing autonomy.

Lastly, implicated in the above contestations, pedagogically, using the technologies leads to decreased note taking, asking of questions, and thinking during

class according to my respondents. Revealingly, the respondents did not mention that their uses of the new technologies are precipitated by pedagogical concerns, or that using the technologies has lead to a visible, measurable kind of enhancement, such as an increase in students' grades. Notably there is no reported increase in class discussion or the quality of students' work, and students do not report higher quality of teaching. Those who use the technologies, do so because it is their area of research, because of a requirement of an administrative nature, because of the technological 'bribes', or because they have a personal inclination to use new technologies. This analysis conveys the participants' struggles with using technologies. Specifically, the tension that arises by attempting to apply a 'learner-centered' model of teaching and learning to the uses of technologies, when the features that are the most conducive to active and interactive learning are not highly used and have not yet became a regular practice. Pedagogically, respondents perceive that using the technologies is limited to transmitting information and may lead to the equating of access to information with knowledge. This disturbs academic culture significantly as the work of academics is the creation of knowledge.

The analysis in this chapter focuses on how academics perceive the uses of technologies in their practices of instruction and learning. The following chapter examines how academics perceive using technologies in the practices of publishing and research.

Chapter 3
Patterns of Use: Publishing and Research

> *...students just pluck things, not that they are dishonest, just that the whole idea of originality is in crisis. The idea of sources is different. It use to be that you go to the library, now there are all these intermediary sources - the Web, Internet, online journals, ...it is a slow transformation of what scholarship means* (Isaac).

Introduction

The previous chapter revealed that the patterns of use of technologies in teaching and learning are being highly contested. Similarly, in this chapter, I describe the regular, everyday practices of using technologies in publishing and research and analyze the extent to which these practices are being embraced and contested as well as the nature of this contestation as a reflection of tensions in academic culture. The nature of contestation is both aesthetic and ideological. As defined in the previous chapter, aesthetic contestation is seen in terms of the ways in which using technologies alters the experience of scholarship. It is ideological in terms of the challenge it presents to the established practices of scholarship that maintain academic freedom.

The established practices of publishing and research, as with teaching and learning, characterize academic culture and determine, to a large extent, the particular uses of the technologies. As with teaching and learning, a 'revolution' in publishing and research has been seemingly imminent in the last decade of technological development. Despite the potential role of technologies in breaking down the hegemony of corporate control, according to my respondents' perceptions revolutionary predictions have not yet materialized. While respondents are not the final authority on publishing online, the struggles brought about when considering using technologies in publishing and research

show the significance that publishing plays in negotiating key norms and values in academic culture.

Publishing

Publishing is a formal requirement of a research career and the established practices of publishing, that is, refereed articles in print journals are held in high esteem, and as indicated by the respondents, are an entrenched part of academic culture. Although much has been predicted concerning electronic publishing, as seen in Chapter One, e-publishing, specifically scholarly publishing[1] has been defined in a variety of ways. I define e-publishing as the communication of scholarly research in an online journal. An online journal refers to either an electronic version of existing paper based journals, or an exclusively electronic publication. Although some professors have created individual Web pages and uploaded samples of their writings, and some have used the WebCT server as part of their course offerings, these forms of idiosyncratic academic showcasing are not considered publishing as such, as they are not referenced in applications for promotion or tenure, for example.

It is interesting to note that most of what has been written about online journal publishing refers mainly to online versions of available print editions, and to making electronically available back issues of existing print journals, rather than to an exclusive online publication. There are significant initiatives to facilitate the migration of academic

[1] Outside academia e-publishing has been referred to as the publication of books online – or e-books, for a sample of e-books see www.diskuspublishing.com

scholarship into the online world, specifically in terms of online databases[2]. These include initiatives by individual journals, journal consortia, government agencies and university presses all generally oriented to increasing access to knowledge by means of online technology. The current state of Canadian online journal publishing is described by Rowland Lorimer in his article "Online Social Science and Humanities Journal Publishing in Canada and the SYNERGIES Project"[3] (2004). The initiatives include Project Erudit[4] and the SYNERGIES initiative. The former is a joint project of the Université de Montréal, Université du Québec á Montréal, and Laval University effectively operating with 19 French-language and bilingual journals online. The SYNERGIES initiative at Simon Fraser University (SFU) combines the expertise and operations of the *Canadian Journal of Communication* with the in-house expertise of the SFU Library, known for its advanced digital systems operations, and the manuscript-to-publication software developed at John Willinsky's Public Knowledge Project[5] at the University of British Columbia. Following Project Erudit's lead, SYNERGIES proposes the creation of a national database similar to the Scholarly Publishing and Academic Resources Commission (SPARC) project, which is primarily a U.S.-based alliance of universities, research libraries and organizations with the goal of addressing a dysfunctional scientific publishing system. SPARC is a project of the Association of Research Libraries (ARL), the membership of which includes research institutions outside the United States. SPARC's agenda is to

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[2] For an indication of how the numbers of online journals has exploded in the last few years in the sciences, social sciences and humanities, see for example Project MUSE, Project Gutenberg, Springer Link, the Online Computer Library (OCLC), and the Journal Storage: the Scholarly Journal Article (JSTOR). For lists of online journals see for example www.lib.ncsu.edu/stacks/ and www.edoc.com/ejpurnal/

[3] Draft of article sent to author (of the thesis) by email.

[4] For details on this project see http://www.erudit.org www.erudit.org

[5] For details on the Public Knowledge Project software see www.pkp.ubc.ca

> incubate competitive alternatives to expensive journals and to encourage digital aggregations. It encourages publisher partnership programs and advisory services that promote competition for authors and buyers, demonstrates alternatives to the traditional journal business model, and stimulates expansion of the non-profit sector's share of overall scholarly publishing (2004:18-19).

The SYNERGIES project would be a database run by Centres of Expertise in a geographic region, with the idea not to duplicate infrastructure elements. The initiative considers a self-sustaining, cost-recovery service administered by the library (systems division) and advised by a journal council. The phrase "self-sustaining, cost-recovery service" is meant to signify that after initial set up, fees charged to journals by the library for publication (i.e., mounting articles and maintaining constant access) will underwrite the maintenance of the system as well as the continuous development of added services (2004:40). The role of the journal council will be to recommend the appropriate levies to each journal given basic cost requirements and needed resources for added services.

The rationale behind SYNERGIES is that the continued existence of Canadian social science and humanities research in and of itself, and as a distinct body of knowledge, requires an organized publishing effort. While that existence is currently supported, it only takes place (at the national level) within print culture. Canadian academic culture is not entirely flexible on the publication venues of the knowledge it produces. The SYNERGIES project represents an attempt to facilitate the migration of social science and humanities scholarship into the online world (2004:42). The project will also allow Canadian social science and humanities research to maintain its position relative to other knowledge producers and publishers in other countries. SYNERGIES will develop authentication and permissions software to make access operational, but journals will be responsible for defining the regime within which they wish to work. The

library itself will maintain access, develop new features, provide advice to users, and assist researchers to undertake system-based research that will access the SYNERGIES database as a whole.

The switch from print to online allows for the publication of other content – data sets and other primary documents, theses, and preprints and other unpublished content such as government reports. Such an aggregation, Lorimer contends, will serve Canada's cultural interests. Moreover, he claims that the migration of the reporting of social science and humanities research online will lead to research innovation in a variety of disciplines. The creation of the SYNERGIES project as a whole publishing system, according to Lorimer, will net the greatest benefit to research, innovation, scholars and students, journals, universities and the general public (2004:42).

The arguments within online publication are situated between free access and subscription fees. Those who advocate open access have a tendency to set aside the publishing function, as Lorimer notes, "a scholarly journal is an energy centre that organizes the development and dissemination of knowledge of public value. A scholarly journal is a building block of a scholarly community especially in non-dominant nations and regions" (2004:24). While many professors admit that journals and peer review serve a simple, gate keeping or selectivity function, a consideration of many journal environments makes obvious that equally important is the organizing social practice that a journal and its editorial board represents. The energy and organizational role played by journals addresses scholarly development and paradigm shifts.

Those arguing for free access and against any form of tollgate tend to use science journal publishing as their basic model where gate keeping is stronger and research

funding flows more freely. Social science and humanities journals have different publishing dynamics. Moreover, Lorimer notes that, if subscription income were to be removed from these relevant Canadian journals, there would be an immediate bottleneck in the reporting and accessing of Canadian research. The point represented by Lorimer is that free access is not really an option of online scholarly journals, and the current system of subscription fees will remain in the online environment, especially for current issues (older and archived issues can be available for free).

Despite the opportunities for the expansion of the range of scholarly communication promulgated by proponents of online publishing, as examined in Chapter One, it is clear that online publishing highlights important tensions in academic culture, especially evident in the differing views of access. Although technologies allow the possibility of increased venues of access, this increase challenges the gate keeping function of established ways of communicating scholarly work.

The driving force behind online publishing is based on several assumptions: that academics are not using the physical library but the Internet and the Web for research, that there is a crisis in publishing, that the use of technologies will alleviate the crisis, and finally that this will lead to a revolution in publishing.

As Lorimer claims in relation to the field of communication: "it is our view that researchers and students are turning first and sometimes last to the Internet, that it is a way to keep the research of our authors in the mainstream of information" (2000). He contends, moreover, that the communications community of scholars has lost a great deal of control over scholarly communication. The large multinational publishers have shifted from providing a service to the scientific community for a modest profit, to focusing on

extracting high profits for their monopoly positions as communicators of significant knowledge (Lorimer et al. 2000). As commercial publishers attempt to tighten their grip on scholarly communication, librarians have begun to take counteractive measures, especially in the late 1990's when cutbacks to universities and ever increasing subscription fees combined to produce a "crisis in scholarly communication" for scholars and libraries, and in Canada a national meeting was organized with wider participation from the academy and the publishing community (Lorimer at al. 2000), as a result of which libraries increased efforts to share resources and resist price increases. In the larger academic community a poster was created to raise awareness of the nature and scope of the problem, entitled "Publish and Perish" and a subtitle that included the notion of a "crisis in the communication of knowledge" (Lorimer et al. 2000:4).

The apparent "crisis" alluded to above, where the challenge is one of wresting control over scholarly journals from commercial publishers and bringing it back to the academy[6] has lead to the initiative of the *Canadian Journal of Communication Online*[7], a combination of online and print journal where back issues one year old and older are mounted, full text on the Web.

Similar to government funds being provided for using technologies in teaching and learning, there are government funds that pertain to developing and promoting online publishing. In the Canadian context many of these initiatives being developed in the social sciences are being partly funded by the Social Sciences and Humanities Research Council (SSHRC) and the Canadian Funds for Innovation (CFI). Possible funding sources for the SYNERGIES project included the CFI, for infrastructure to encourage

[6] An issue of concern to various authors: Cummings et al, 1992, Ginsparg & Sompel, 1999.
[7] See WWW. CJC-Online.ca

innovation, the Canada Magazine Fund to support journal needs, and the Social Sciences and Humanities Research Council to support research dissemination. It is worth noting that CFI has refused funding for online journals in the Spring 2004, indicating a withdrawal of interest in online publishing.

The general model for electronic publishing envisions university-centred distribution, lower publication costs, 24-hour computer access to documents, faster review processes, a hierarchy of publications based on the review process, extensive online discussion and updates, powerful search techniques, and multimedia enhancements[8]. This signals a dominant discourse of a "revolution" in scholarly publication, that the whole journal publishing industry is changing, and that this change is desirable and inevitable[9].

My research suggests, conversely, that the actual changes in terms of publishing practices of academics are much less accentuated and innovative than a discourse of revolution would indicate. Only two of the thirty-seven academics interviewed actually published in journals that are exclusively online. Many of the respondents do access online versions of existing print journals, and subsequently print the articles in which they are interested. While universities are purchasing software packages and databases that contain many journals online (such as Project Muse) and despite the various initiatives of online publishing, the perceptions of my respondents indicate that there are many areas of contestation relating to the exigencies of academic culture, specifically those of an ideological and aesthetic nature.

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[8] See, as indicated in the literature review in Chapter One, especially Okerson, 1991, Hannum, 2002, Bennett, 1996.

[9] In Canada, at Simon Fraser University, the Canadian Centre for the Study of Publishing (CCSP) includes an Advance Publishing Research Lab focusing on evolving publishing technologies, particularly Web and database technologies.

Respondents perceive that online journals lack credibility and legitimacy. They cite a number of reasons for this claim. First, e-journals have not yet been institutionalized, the idea is still relatively new, and has not been widely accepted by university institutions as a legitimate venue for scholarly work. Secondly, they suggest the leading scholars in each field do not publish in any online journal that does not have a print version. Thirdly, there is also the assumption that it is easier to publish in an exclusively online journal. Finally, the established habits of scholarly publishing and reading scholarly journals have yet to change. This is evident in the ways in which reading online is different from reading a print version, both in portability and in texture; in scrolling rather than flipping pages; in reading a screen at a time rather having the whole paper in your hands.

José Luis exemplifies most respondents, who have not published online,

> I have not published online. They talk about the online version which appears much more quickly. So I think that it may be that the articles are made available online in advance of the print version. Now whether there are articles which appear online and not in print I don't know, but certainly the availability of stuff and very quickly seems to be going on.

However, the availability of articles online in a systematic way is not a new development in the Physics community. It has had online pre-prints of articles, that is, informally distributed electronic versions in advance of the print publication, for the last few decades.

Participants also point to the lack of institutionalization of online journals. Isabel expresses this effectively when she states that professors "publish in established print journals because they are the ones where cutting edge work is being published", and additionally they tend to be locations where "some of the leading scholars in the field

tend to crop up from time to time; they are also dynamic enough that not the same six people, all male and from Europe, publish in them, certain journals have a tendency to do that so it ends up being a series for them".

Moreover, most professors continue to prefer established print journals in terms of incorporating journals into their teaching. As Isabel contends, they are "the ones I tend to incorporate articles from in my teaching and I go regularly there to look because I am happy with the quality of the work". The above comments by both José Luis and Isabel indicate sedimentation of habits in the practices relating to publishing.

The lack of status of online publishing is also highly visible in the tenure and promotion practices. For example, for the preparation of a tenure dossier for promotion contra the promise that promotion and tenure committees will gradually consider online publications, professors continue to prefer to publish in a print journal publication. As remarked by Isabel: "I know that for things like preparing my own tenure dossier for promotion, would I go after a print journal publication to beef up my dossier, or would I go after a online journal? No doubt about it I would go after a print journal". Similarly, Raul states "well I was under evaluation and I was afraid that it would not be considered as much". This is because the current practice provides established prestige to existing journals, which drives the system and maintains it. Thus, despite the potential of online publications to ensure increased dissemination of knowledge, prestige is still derived from a publication in an established print journal.

According to respondents' comments intellectual and cultural capital is less likely to accrue from publishing in online journals. This is also evident in the lack of consideration given to e-journal references in hiring and promotion committees. In her

role on hiring committees, Isabel maintains that if she comes across a publication in an exclusive online journal,

> I would consider them against a journal where it is extremely difficult to publish in, you know there is a waiting list in Media, Culture and Society a long list, their standards are really high, their reviewers are extremely rigorous, you know that if a student has a publication there you are really impressed, but if it is an online journal you've never heard of, it is the same thing if it is a print journal you've never heard of. So it's that assumption that it is not as prominent of a journal.

Similarly, Isaac contends that electronic publishing has not yet exerted an impact on scholarship,

> I have a lingering prejudice against them, and, at this point, do not consider them to have the same legitimacy as print journals. I've not been involved sufficiently in the peer review process for these journals to have direct evidence that they are as vetted as seriously as print journals. And there is not sufficient reference, in existing scholarship, to major works published in e-journals for them to appear to have an impact on scholarship.

The overlapping issues identified by the professors is that academic reputation, which means to become known and to have a say in what happens in the field, is entwined with structures of power in publishing. The lack of legitimacy comes from, partly, the perceived fact that influential scholars are not seen to submit articles for publication in those venues.

This perceived lack of legitimacy is also related to the perception that online journals are an easier venue of publication than a print journal, and is based on the assumption that the selection and review process might not be as rigorous. While admitting that print journals also vary in their scholarly standards, the inference still circulates among professors that it is easier to publish in online journals. As Isabel notes, "I think that we also have a residual assumption that it is easier to publish online".

Agreeing, Isaac contends that "I still believe, I guess, that people publish within them because they are less able to get published elsewhere".

Some professors contend that another contributory issue is that as online publishing is a recent phenomenon they are not as well known as their print cousins. Isabel points out, "if online journals become well known maybe it will equalize it a little bit but they have not been around as long and they have not been given that much status". Despite the fact that the possibilities of e-publishing have been around since the early 1990s, the prevailing perceived lack of legitimacy, I contend, is grounded in persistent norms of academic culture.

Presently, there is a residual assumption that they are not as prominent despite some of them having the same rigorous process of peer review, as Isabel explains, "some are juried, some of them are well done and there are some terrible print journals out there as well". The lack of prominence is related not to the quality of the e-journal but to the research habits of professors and graduate students who do not have a regular enough practice of searching and subsequently reading the latest articles in online journals. Rather what tends to happen is that print journals offer the titles of the current issues online and professors will read these and then read the print versions, which they subscribe to.

In addition, professors and students, given the access through Project Muse for example, access older versions of articles and print these for later reading. This is a very different kind of practice from reading a physical print. And a printed Web copy is different from a book copy, as the Web versions tend to be longer. The reading habits of academics are such that online reading is not always an option, as Jessy asserts "when I

read I tend to be usually in a chair at home or on a train or plane, so I they want a piece of paper or a book, which is practical and unobtrusive".

These practices are related to the aesthetic contestation. Isaac claims that, "generally I find them difficult and unappealing to read". The online format, with a combination of frames as columns on both sides with various related but independent information from the main text, which is in the middle frame on the screen, is more conducive to reading small bits of information rather than entire texts. Additionally, the abundance of extra information and the flashing of some frames can distract the reader away from the main text.

A fairly standard matter, publishing in online journals is to be more accepted in new areas of research as well as in qualitative research. Both professors who have published in an exclusively online journal were publishing work in a new area of research. Concerning qualitative research Melissa points out that in her area of research,

> I do qualitative research and it is relatively difficult to get qualitative research published because you can't write it up well in a short space, you have to describe more and have more in there, you can't summarize it quite the same way and so electronic journals if its 20 or 50 pages it doesn't make a difference, so there's a couple of journals.

As she explains in relation to new research areas,

> in education there's a move for teachers to do research on their teaching, it's called Action Research[10] and that's virtually impossible to get published in established journals so online we've been looking at publishing online because a lot of my masters students do Action research, which is in the non-thesis option where they have to do a project.

In new areas of research new venues for publication are usually sought and some online

[10] Action Research: just as in the context of film, it amounts to a transfer of control over documentary film making from media professionals to the subjects of the documentary (the Fogo Process, Quarry, W. 1994) in teaching this means the control is in the hands of the students teachers.

publications are created in this vein[11].

Some professors claim no issues with online publishing despite not submitting their papers to online publications. José Luis asserts that he does not have any concerns with online publishing, "I don't have any particular issues with online versus print". He adds, however, that the important issue to be considered is whether online journals are peer reviewed; as he notes, "have they been authenticated, and that's a little bit of a problem with these archive systems and things, but typically you can orient yourself because you know who the people are where the institution is so that you have some criteria to start of with". He is referring to the pre-print system in Physics scholarship, where articles are first published online and later in the print established journals.

José Luis goes on to point out that the concern with regard to online journals are the same concerns that he highlighted regarding the use of computers in teaching and learning, that is whether students are taught the criteria to decipher the relevant information as he claims,

> they are the same issues again we mentioned talking about schools earlier, the idea that school children can go to the Net and get information on whatever their project of the week happens to be, but the biggest issue is what are the criteria that they have to be taught to use to discriminate between what is junk and what is a real scholarly, a real relevant resource. If it's a journal which has been per reviewed which is online, I mean that's the purpose of peer review, it is to try and dispose of the clearly irrelevant or clearly erroneous material, and sometimes of course it gets rid of some stuff that's merely controversial, that's ok.

Isabel agrees that there is a perceived lack of criteria for assessing online journals; she contends that while she appreciates the efforts being made to establish criteria, her

[11] This is especially the case in new areas related to new technologies in teaching where the purpose is to publish research articles that deal specifically with how new technologies can be used to enhance teaching and learning, see for example the Interactive Multimedia Electronic Journal of Computer-Enhanced Learning (IMEJ) www.imej.wfu.edu.

preference remains to read a physical copy, "I can see that there are efforts being made to try to get criteria that would make people feel that online journals have equal value to print copies. But I still have trouble personally imagining reading an online journal". Echoing the same sentiments, Romi remarks, "I only read the online scientific journals that we have paid subscriptions to". The implication is that those ones have undergone the established peer-review process are perceived as being generally more reliable sources of information.

Agreeing with Isabel that there are some attempts to establish criteria for online journals, Jessy notes that it is not clear what these criteria should be,

> there have been no strategies to help people deal with the streams of information, like how do you create an online library, like a wall shelve, or your office library, or going trough disk files and downloading them. I think there is loads of training provided for the systems we must manage, like Banner and MINERVA, but there aren't training sessions on these more personal aspects, how to use the new technologies to enable us to find things when we want them that replaces our visual library.

A related, though not identical issue, as will be evident in the section on research, is that all professors have restrictions on how many online sources can be cited by their students in research papers. With graduate students, I found that there is a culture of refereed journals and most do not use online references that have no print version. Undergraduate students tend to be more likely to accept online publications as legitimate references, particularly those in their first and second year of university, who may have not yet been exposed to a research environment and taught the difference between refereed and non-refereed journals. This suggests that seniority of an academic is related to the level of acculturation into academia and that in turn is related to the likelihood of acceptance of online sources.

It is interesting, and seemingly contradictory, given the "publish or perish" ideology of scholarship, as well as the copious amount of time it takes for articles to be published, that online publishing is not becoming a rapidly accepted practice. A common strategy for many professors is to try to publish in "good journals", as Raul asserts, and at the same time look at other options, including electronic.

One of the major advantages raised by respondents in favour of online journals is their faster rate of publication, that e-publishing inherently leads to a speedier process than conventional print venues. There is an assumption that electronic publishing reduces the time it takes between submission of an article and print, primarily because manuscripts can be sent and received by email rather than physical posting. This assumption, however, is critically evaluated in this research as it is clear that, as examined in the previous chapter, the quintessential advantage of email as a time saver has been shown to be a myth and dispelled. As with the use of email, a concerned raised by some respondents is that the increase in online journals inevitably leads to an increase in the number of publications and accelerates the process by creating the expectation that papers can be published faster. Raul remarks, that "you have to do it faster, before it was accepted if you took a year to revise it was OK, but now you have to do it faster".

This is the same issue of temporality raised with the use of email, (and well as PPT and Web CT) whereas the use of the technologies is promoted as reducing the amount if time it takes for an activity. Contrarily, what happens is that using the technologies actually increases the amount of time spent on a particular task, and in many instances it increases the amount of activities performed by academics. Concerning publishing, as more and more venues of publication are developed so does the pressure to

produce articles in shorter periods of time. In this speed-led system quantity might take precedence over quality, as it takes time to write and edit work of high quality, hence the perception that online journals are of lower quality than print journals.

In addition, there is the perception of a saturation point. This is the phenomena of overload that, as with the information overload observed on the Internet examined in the following section, is also persistent in online publishing. This Raul claims, is "because of not only material but all kinds of journals: one published by Amazon, one by Routledge, one by etc. having more or less the same content".

An interesting point emerging from the respondents' comments that merits attention here is that the particular technology praised is email, not any actual publication software technology. The advantage is not the publication venue itself but the possibility of accelerated interpersonal communication between the professor and the reviewer. However, if online articles are to be reviewed there is no reason to expect that this process would be faster online as the time it takes to read the articles by reviewers remains the same.

Professors and students tend to agree that online publications contain, in principle, another important advantage. The gate keeping function of many established academic journals is an impetus predisposing the acceptability of online journals. Raul explains,

> I don't trust very much the peer review process of most of the journals. I don't say that all of them are like that, but most of the journals, they do some nitty gritty control which is theoretical, they just want things that the editor wants to be published, so if you present a paper that does not go to support their ideas, or the ideas of the person that they want supported, your paper will travel for years to reviewers you don't even know.

Expressing interesting patronage related dynamics, Raul adds that there are only

three journals that professors in his field are expected to publish in, and that online journals may be more open in editorial terms to various types of work. While there is a tendency to see the gate keeping role of established journals as an entirely positive element of academic culture, Raul's comments illustrate that there are power implications in numbers that create distinctions and establish hierarchies of publishing. This highlights a less romanticized notion of academic culture in the awareness that it entails a set of practices that establish norms.

According to some respondents, another important, and interesting advantage of online publishing, is that knowledge can potentially become available to larger numbers of people. Margarida links the perception of an evolution in publishing to the idea that online publications will provide access to wider audiences, as she conjectures "because academy is not only teaching to your students, you know, it's increasing the knowledge of everyone, so I think that it should be more for that".

The perception that online access can contribute to the dissemination of knowledge is adamantly challenged by other respondents, who find it difficult to reconcile the subscription exclusivity of journals and listservs with the notion of increased and 'open' access to information. Open access and increased access really means increased venues of access for those who already have access. It does not mean access to those who presently have no access to the current venues. Conversely, some respondents point out that rather than more access to knowledge there is actually less access, as Iara laments,

> the access to information is quite wonderful if you are a student paying tuition or a full time faculty. If you are a post-doc or work in industry, or are a sessional instructor, you do not have access at

> all. Or if you're an independent researcher you're limited to Google.

She further explains that the availability of information online actually decreases the venues of access by eliminating the physical print versions from the library,

> before the libraries had all the information on site, I could go with my alumni card or anyone could pay $100 a year and get a library card and have access to journals and databases and go to the library and get the journal and read it or copy it. Now, many journals are online only so that I cannot go and read them unless I have access and with my $100 a year library card I do not have access.

Despite the benefit of increased access, this availability turns out to be a venue of access to those belonging to an institution, not to the public at large. Electronic databases, journals, and other materials and documents are licensed for institutions that require membership for granting access. As Iara astutely remarks,

> unless people are talking about access to people and information in relation to their own students and faculty it's fine if its just for our own, so that we can speak our own speak. But if the idea is lifelong learning, that we have the 'knowledge society', then there is actually less availability of information. As an independent researcher, I have no access to the social sciences and humanities archives or indexes or anthropological or even the Oxford dictionary or Larousse, they all require a password.

In the dissemination of knowledge the gatekeepers remain online as they do in print culture. Although some find ways to circumvent the gate keeping, as Iara asserts, "but of course we have other networks and friends who have library cards and who pass on information but it is all an underground economy, it is a grey sphere of illegal sharing of information".

Respondents express a belief that there will be "an evolution in the academic milieu to integrate individual creativity and give rights to the people that produce those things and in fact by pass in some ways, maybe you could get the approbation for what's

there and make it accessible", as Margarida hopes. Additionally, some predict the inevitability of online publishing replacing current practices, as Bruno exemplifies "I see a day when there would be no print version of certain journals. I mean, you'd still get a print version because I would print it myself". At the same time, other respondents' perceptions indicate that an 'evolution' is not occurring, and that while technologies can be used in publishing, the current practices will likely remain preferable because of their inextricable association with prestige and scholarship. The implicit paradox is that while there are considerable financial resources granted to publishing projects, the actual publishing online as scholarship is extremely undervalued. Explaining the point, Margarida contends that,

> I think the University should make some space for this to be valued more, say you have the articles on the Web because the students get them and people can read about you and it's much better publication than anything you can ever have in a journal where nobody gets that. I have articles I should go read for next week's course but I know I don't have time to go to the library and read it there. So I think that it is very nice that you can put it on the Web.

Furthermore, respondents' perceptions challenge various assumptions: first that undergraduate students prefer online sources to printed sources for their papers and projects, this assumption neglects to take into account that undergraduate students are part of a demographic that has always used computers and therefore are predisposed to using them, and also ignores that entry level students may not have yet been taught how to differentiate between scholarly and non-scholarly journals.

They also challenge the assumption that the utility of online searching, communicating, analysing data, and the use of computers for the preparation of manuscripts are uncontested. While email has become the primary mode of

communication among academics, and Microsoft Word has become the application most use for writing, both are perceived to have important limitations as examined in the previous chapter. In addition to challenging these salient factors, respondents' perceptions challenge the contention that there has been the creation of an environment for the acceptance of online scholarly communication and that there is more acceptance from the broader community of users and their libraries, research funding agencies, and promotion and tenure committees. While libraries have set up archives and access points to online sources, and research funding agencies have announced the acceptability of electronic publishing in the review of qualifications (Advisory Committee on Information Technology, Subcommittee on Policies, 1996), this analysis clearly suggests that promotion and tenure committees are not abandoning the importance placed on the relationship between the value of peer review and print culture.

Finally, participants' perceptions are that the creation of Web based scholarly communication systems equal to the commercial sector, in this way contributing to scholarship, to the advancement of scholarship and to the effective communication among scholars, and combating the commercial capture of scholarly communication, has not yet been effectively achieved. It is a fundamental paradox that given the various perceived stated pressures in publishing (time, gatekeeping, etc.) more academics are not taking advantage of the potential solutions offered by the new technologies. This paradox can be explained, I submit, by academic culture and its traditional values and norms.

Conventional scholarly publishing is clearly a problematic aspect of academia, with its lengthy publication time, gate keeping function, and commercialization of knowledge. Electronic publishing is viewed as a response and mediation to these

problematics. However, the predicted and promoted changes in the scholarship process, such as the shift from linear expanding into various hypertext formats and with more visual and sound items, increased accessibility, and lower distribution costs are not perceived by respondents to be occurring, generating some evident paradoxes. The online journal format remains mostly linear with little interactivity (such as simple images, or hypertext[12], or with more sophisticated applications such as simulations and video) for a variety of reasons. The most important of which are: the time it takes to create multimedia and interactive materials, the possible problems in viewing with slower computers, and because of software standardization issues[13]. In terms of maximizing accessibility, a print journal is portable and always accessible (and so is the book shelf) even more so as it does not depend on having a plug to connect to the computer or require Internet access. Concerning lower cost distribution, while it might be true to a limited extent, there is no reason to believe that commercialization will not expand to online publishing. The current general strategy for online journals is that back issues are available to the whole world, and current issues have restricted access by subscribers only who pay an annual fee, as is the practice in print journals. The issue of open access seems to have been rejected, as it is costly to maintain the journals online as well as in print. In addition, an online publication is easier to ignore because it is not physical, it does not arrive on your desk, and it does not have the magic of a "new publication".

An additional concern voiced by participants is with the practical issues of

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[12] Hypertext is the inclusion of electronic links within a body of text, a number of these links is referred to as a 'knowledge Web" where the reader can click on each link to access it.

[13] For a succinct summary of the obstacles in interactive journals see Burg, Wong & Boyle's article *The State of the Art in Interactive Multimedia Journals for Academia* available at http://imejwfu.edu/articles/EDMEDIA2000paper/index.asp

copyright and intellectual property. Canadian copyright experts' recommendations from the Industry Canada's IHAC report (1997) contend that anyone is allowed to browse provided that no permanent record is made of it. This means that one needs to have explicit rather than implicit authorization. The reason for this recommendation was that the experts felt that it was clear to all concerned that the author had copyright. The view of some of the IHAC members differed from the above position to the extent that they saw the need to provide more expansive definitions of browsing in terms of "fair use" or "fair dealing." This notion of browsing would permit researchers and students (and members of the public) temporary access to any site on the Web without having to pay a royalty. Only when the online information was rendered in permanent form was it copyrighted. However, in Canada, as elsewhere, the law remains uncertain in this regard. Presently, the consensus is that there should be copyright for anyone putting a course online unless there is an express authorization. However, the use of Web-based course material would be categorized as other materials that are used for the purposes of private study and research.

The issue of intellectual property is situated between the rights of the author (as irrelevant an issue as it might be in most cases), on one hand, and on the other hand, in trying to ensure that knowledge is as freely and widely accessible as possible, especially for "not-for-profit" purposes. As Tommy points out, "I think that intellectual property law can be extended to cover all online publishing. It is less of an issue in social sciences and humanities, no patents, no need to pay contributors, etc".

While most professors do not publish in exclusively online journals, some have created online sites for their courses. For example, they have course materials on the

WebCT server. Therefore the issue of copyright is also pertinent to Web based courses. Presently, there are no policies for the use of the material on the WebCT server. However, as Raul asserts,

> there are discussions about content being produced with WebCT, presently there are some serious discussions between the University and the trade union of the professors because the trade union had some issues with ownership of what professors have on the WebCT. So there is a big discussion here and I am sure that if the University ever decides to claim ownership or copyright of the content that's being produced within WebCT by professors and students, they'll stop using it.

There is an implicit assumption in Raul's comments that professors have copyright ownership of their online course material. This highlights the perceived importance of copyright ownership as an inherent right of faculty and is directly tied to academic freedom. This model of ownership is perceived to be under revision with the possibility of developing online courses. The diffusion of courses into the digital environment means that the job of teaching can be divided into separate parts: course development, course delivery, revision, and evaluation. Each of these parts can be performed by different employees rather than by individual faculty members; faculty ownership, however, hinders the ability of the employers (the university) to shape, revise and sell courses. By identifying questions of copyright as closely tied to academic freedom and scholarly work, the decision to preserve copyright with faculty protects a model of teaching where the faculty, rather than the administrators, determine the content and spirit of their courses, thus defending academic freedom and related issue of intellectual property rights of faculty.

The presumption of ownership of copyright by a professor is important to the extent that it supports, fosters and preserves academic freedom. Similarly, the

determination not to interfere with academic freedom is essential in teaching and in the pursuit of knowledge. The issue with online material is related to fundamental principles, which are being threatened and challenged by administrators, politicians and businesses treating scholarly work as an industrial product.

The policy for online material is in principle the same as other material. Regarding the WebCT server, Bruno's understanding is that,

> it would be very difficult for a casual from outside the university to actually realize that copyright materials are being distributed. But in the sense that there are aspects of the copyright legislation that governs how much copyright material you can distribute to students in a course I don't see how that would be much different than the web ct mechanism.

Because the material is password protected, professors are not concerned with outsiders using it, as Antonio points out: "since all the material is password restricted I am not really concerned about it. For me it's not really a big deal, if someone wants to take all my slides and tech another course with them oh well". However, they are concerned about copyright issues from the institution. Raul expresses it this way: "I am concerned about copyright for Web courses, we have less property ownership over our courses than many other universities". The intellectual property policies at the universities have been modified to include "learnware" technology defined as "software designed for teaching purposes that provides for interaction with the user, or makes use of a multimedia product, or both. It includes technology-enabled learning products in electronic format", and would apply to courses on the Web CT server. The policy also includes Electronic Resource Material (ERM) defined as the "electronic representation, in whole or in part, of an Invention or Software, that includes but is not limited to, digitized blue prints, programming source codes and executable programs"(McGill

University Policy on Intellectual Property, 2004).

Although most professors are preoccupied with the issue of whether Web sites and Web CT courses are copyrighted material, some are less concerned. Raul, for example, remarks that,

> people here think I am crazy because of that, but I know because I have a tracking system and I know who, from which server provider, people have visited my Web site, so sometimes I get weird visits from foreign universities, maybe they are just looking, yeah and copying I don't know but I don't care. I think I find it's not that bad it's OK, I put my name on it if they don't want to mention it, how can I know, what can I do, people can copy what's public but they can't copy my mind.

My respondents suggest that a move to online publishing is not occurring as promptly as envisioned by proponents and leaders of online publishing. This is related, to a large extent, to the habits of academics in their practices and the perceived lack of credibility of online publications. Both these factors are directly related to academic culture. The journal form, as distinct from the object, will continue to maintain its importance even more so when it becomes easier to locate and order items. Journals are also a way for new scholars to have a chance at reshaping their disciplines and of influencing the research agenda in their field of study. This is an instance of the importance of the disciplines on academic culture emphasized by Becher (1989)[14].

Computer technologies could lead to a more varied availability but the form of the journal could remain the same. However, the availability of online journals will apparently not lead to a change in the traditional practices of having material in one's hands. Clearly, online publication is not being legitimized by academic culture. This leads to a cyclical situation of reluctance to publish in online journals and lack of

[14] See discussion in Chapter One, pp. 7-9.

acceptance of online publications as legitimate scholarship. The notion of legitimacy, however, has become a tricky term, breaking down as more print journals are published by commercial publishers who have bottom-line considerations.

Research

There is a prevailing, yet unspoken, assumption by academics that professors and students are conducting research online. However, this study found that while an emphatically promoted facet of computer technology has been its potential for research, particularly collaborative research, this refers simply to the sharing of information between colleagues collaborating on a project via email, or to searching for information available via the World Wide Web. Online research refers primarily to searching for information available in electronic format, and not to actually conducting research that is exclusively online. Additionally, the promulgation of new technologies for research, in the disciplines studied, has assumed no contestation when, in fact, the contrary is the case. The contestation in this regard has to do with the issues of relevance and reliability of the searches and plagiarism, as examined below. The nature of this contestation is ideological based on what scholarship means and what is acceptable scholarship.

Most professors and students express high praise for the searching capabilities of the World Wide Web. For example, Paula remarks that, "the use of the Web is a great thing. I do a lot of research on the Web. I download a lot of things off the Web. My own work is on 16th Century so I work with a lot of stuff that's not online. But even that, like the Venetian Library is now online, all of that has been done" and that is useful. She finds that the search ability the most useful feature of the Web, whether she does the searches

herself or delegates it to her research assistants. As she points out,

> what's really useful is that I ask my research assistants to go on the Web for me and do searches on the periodical index that sort of thing, so that's useful because I can give them some search words and they can come up with a list of sources and sometimes they summarize things for me. I am working on a project now with a lot of obscure artists that nobody usually cares about, so one of my assistants can go and find out biographical information, so that kind of research has been great.

Similarly to professors, students appreciate the easy access to information. Bruno sees the access to information as the main advantage of new technologies,

> before I came to Education, I was in Political Science on Canadian Foreign Policy and a lot of those documents are now available online, back then we had to go to the National Library to get the documents. Now I can just point the students to the Web site and the information is up-to-date. So in a way when we and students they use those as primary sources of information for papers they get more up-to-date information as opposed to a three year old report. In that sense it eases access to information. And in Education now all the sources like ERIC[15] are now available directly online.

While the proclaimed usefulness of online availability of vast amounts of information cannot be overstated, both professors and graduate students expressed some disenchantment with the lack of serendipity associated with online searching. They contend that most of the best references come from doing searches on library shelves as books are stacked by topic and subject matter, rather that online cataloguing which tends to be alphabetical (at both universities). Additionally, Paula remarks, "I still find that the best sources of material come from footnotes on other people's work".

Related to, but independent from, the serendipity factor is what Bruno calls "the fun to go and browse through the library and look at books on the shelves". He is alluding

[15] Education Resource Information Centre, since 1993 journals articles and documents are available online, as well as all references related to the field of Education.

to an aesthetic difference between the experience of 'browsing' online and physically going to the library, an activity within academic culture. It is interesting to note that he uses the term 'browse', which has become associated with online searching, to refer to library research, thus applying a new word to an old practice. The term browsing also denotes a more casual, even disinterested, practice than research, which denotes a more serious and calculated activity.

Consistent with professors not publishing online as an established practice, they are cautious to recommend online journals and materials to their students, and set parameters around what sources they will accept as legitimate references in students' papers and essays. This contrasts with the perception that academics use primarily online sources for references. Part of the professors' reticence in recommending online journals and sources to their students is they suggest that the criteria to discriminate between what is and what is not a scholarly source needs to be established and taught to students. This is, partly, to maintain the boundaries of scholarship.

Increasingly, professors set limits on the number of online sources they will accept as references in their students' papers. Proportionate to the increased amount of available information, professors are delimiting what sources students are allowed to cite from the Web. This limitation on the amount of acceptable Web based sources accomplishes a similar function to the email policies informally adopted by professors examined in the previous chapter. In research, rather than drawing fewer boundaries around research projects, professors are demanding that students be critical of the sources on the Web. As Paula remarks, "increasingly I find that I have to limit what students use on the Web". She now stipulates the amount of web-resources students are allowed to

cite "actually they're only allowed to use one Web source for their essays out of a list of seven, the rest have to be books or journal articles".

Furthermore, Paula has included the extent of Web based sources used as part of her marking criteria. She explains, "the criteria says that to have an "A" you need to do this, to get a "B" you need to do that, and if they want an "A" there should not be any online references or just one or two". The limiting of acceptable Web sources in student papers and essays, is directly related to the issue of criteria alluded to above. As José Luis points out,

> the biggest issue is what are the criteria that they have to be taught to use to discriminate between what is junk and what is a real scholarly, a real relevant resource. Not going to the library, searching for everything until you have a list of things, OK that has made it faster, easier in some ways, but students need to be taught the criteria to discriminate.

Similarly, Jessy contends that the lack of established criteria for online sources and the perception that students do not have the skills to decide on relevance and reliability of online sources is a concern,

> I find it a problem particularly with undergraduate students, who if you give them a paper to write they will bring in all sorts of stuff that they find on the Web and they never, not never, but often, they don't really check whether the source is particularly reliable or not. They seem to think that if it's on the Web then it must be true. So I think that we have to start teaching students to be more critical of what they find.

Agreeing, Romi points out that, while students are quick to use online material before tex, they may lack the skills to determine the relevance of the sources,

> what I have learned is that you have to question who the author is, who is on the editorial board, where is it coming from. I'm not sure that all students are making those jumps, they might be overly trusting of online journals and materials. But it depends on the discipline, some disciplines have well established online journals

and that is fine but Education is kind of weird about it.

Seemingly, in the field of Education, online sources are not considered as legitimate as print sources. Paula concurs that students "need a critical line of thought". She is alluding to the extent to which an environment has not been created by professors for students to develop the necessary Web search skills required to distinguish between works. Acknowledging social problems with using the Web, she claims that,

> it is getting worse, I've only been here for two years and before at UBC and before that I was teaching a summer course in Chicago, but over that time I have noticed that students know less in a 300 level course about how to do research despite the fact that their Internet skills should be stronger and they and there's less recognition of what Intellectual Property means, so that's my big concern.

The implication in Paula's words is that the greater the quantity of information available, the greater the need to establish criteria and make it known to the students about what constitutes relevant research, and how to do research. Research, for most of the first year students I interviewed meant to perform a "Google"[16] search for whatever information is available online. This assumes, not only that the information available is relevant and reliable, but that the information available online is the only relevant information, neglecting printed books and journals that are not available in electronic form.

Both these, interrelated but not identical, practices of not recommending online journals to their students, and not accepting them as legitimate sources of reference in their research papers and essays because of the lack knowledge on the part of students of the criteria to distinguish between sources, reciprocally contribute to the lack of

[16] Google is a computer search engine, see www.google.com

credibility and institutionalization of online sources.

A related concern is the extent to which the Web has become a fertile ground for plagiarism. Professors are noticing a rise in plagiarized works accessed on the Web. There have been cases where students have copied entire research documents without citing them. Paula confirms this from her experience,

> in fact, I had a few cases but one where the student, it was a fluke that I marked the essay, usually the assistants would but I think it was handed in late, but now I read at least half the essays, in some cases all the essays, which the TAs did before. Just because of the risk of plagiarism, a student just copied the essay entirely!

The ease of access to information can lead professors to change their marking practices. This is the case with Paula who now marks most of the essays instead of delegating the task to her teaching assistants. She mentions another case where a student "has taken other students' papers that have been put on the web from a different university. This student took big chunks of this paper and referenced it as if it was just as good a source as a refereed journal article".

Plagiarism is a major concern, to such an extent that there are various anti-plagiarism software programs, most notably one particular one called "turnitin.com"[17]. This is a software application adopted by the universities that contains a database of student essays and papers where professors can submit students work to be checked against that database. Each essay turned in automatically becomes part of the database. However, the practice of 'turning it in' assumes that students are guilty first and it may, in some cases, actually promote cheating rather than preventing it. As all professors at McGill University, Paula was asked to join a university group whereby students' essays

[17] For further details see www.turnitin.com

would be submitted into the program. However, she refused, as she explains

> I said no, first because I don't want to assume that students are guilty first because I think that it actually promotes cheating rather than the other way around. So my feeling is that you can often sense it when it comes up. And if I've read an essay where I have some suspicions I go to a few Web sites where you look for an essay and I do a search for the name.

The incredible amounts of information available and the ease of access promote the idea that information can be reproduced without properly citing it. As Paula asserts, "even if you are not using it word for word there it is still the sense that information is out there in the universe and we all have access to it, this is problematic for me as a historian and someone who cares about what that means, citing sources, it's really a problem". Students are not citing the sources of the information they retrieve from the Web in their papers and essays because they perceive this information to be 'free'.

The copy and paste features, the ease of access and the enormous amounts of available information that leads to the perception that information is 'free' also leads to another concern, one of the originality of papers and essays. Isaac explains,

> where students just pluck things, not that they are dishonest, just that the whole idea of originality is in crisis, the idea of sources is different. It use to be that you go to the library, now there are all these intermediary sources - the Web, Internet, online journals, some of it is dishonesty some of it is a slow transformation of what scholarship means - now we will have to figure out what is acceptable and what is not.

The potential lack of originality in academic papers and other work impels immense pressure to traditional notions of scholarship and consequently to the boundaries of academic culture.

Along with the expressed concerns there are several advantages in having information available online such as making archives available as well as CDROMs of

conference proceedings that are increasingly being used by academics. In addition, a major advantage for many professors is using computer software applications for the building of databases. Isabel claims that "putting research material into databases is something that I am starting to think about in terms of an ongoing research practice so that things are not just sort of here and there and everywhere, that is something I am toying with".

Similarly, Cindy claims that not only is it easier to stay updated on new research via email updates from journals, but it is also "easier and faster to acquire data and to organize data with software than by manual calculation". Agreeing Jessy contends that the analysis of data is made easier by the use of statistical software,

> I mean it is very time consuming to learn how to use the software programs, but you can actually have enormous amounts of data, in our case qualitative data that can be analyzed and converted into reports, so it is possible to do away with cutting and paste cards, things on the walls, all the grouping, etc. can be done virtually rather than physically.

A claimed advantage of computer technologies is that it allows the possibility of increased collaborative research. Specifically, new opportunities for research have emerged independent of location and time. As Margarida points out,

> there are a lot of networks of research between researchers and grad students. Like we have a joint project with Moncton and it takes $500 to go there, but we talk a lot to each other on the virtual place and it makes a tremendous difference to be able to see them and meet them and you have some commitment.

Virtual places, such as discussion forums and chat lines allow groups of scholars to participate and dialogue about their research, and email allows for easy communication. Despite these possibilities, according to my respondents, most research continues to be accomplished by single scholars working alone, and scholarly research through the

electronic world or Internet scientific collaboration[18] continues to be an exception rather than becoming the norm.

Conclusion

This analysis suggests that whether in publishing or in research the promulgation of technologies for the creation of knowledge is associated with some moments of contestation that reflect quite traditional and inflexible values of academic culture anchored in assumptions about print culture and knowledge. Publishing online means simply the electronic availability of existing print journals and research means searching for information rather actually conducting online research as a methodology. While there is an assumption that academics want and are looking for all articles online, they are really only searching for online versions of print journals. Additionally, while technologies such as Word, email, databases, and other applications, are used in aiding the practices of publishing and research, the perception of my respondents is that academics are not accepting exclusively online journals as legitimate scholarship.

Despite e-journals being around for over a decade, most academics continue to perceive online publishing as something that they are resistant to engage in not only as a publication outlet but as a reading practice. Only two of the twenty-three professors from the two universities that participated in this research have published scholarly work online. In addition, no online journals were cited as the top journals in the disciplines of Communication, Education, Engineering and Physics, despite the online pre-print journal culture in the latter sciences.

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[18] See J., Udell's article on groupware for scientific collaboration available at http://software-carpentry.codesourcery.com/Groupware/report.html, July 2001.

While research will continue to be supported by technologies and important and useful changes have been occurring in terms of editorial, production and distribution, there is at the same time significant contestation highlighting the importance of established scholarship and habitual research practices that are an integral part of academic culture, putting considerable pressure on, contesting, and leading to a bolstering of academic habits, practices and distinctions.

Chapter 4
University Education: The Will to Knowledge and the Will to Technology

> *There is somehow a notion that technology can improve the quality of education. It really isn't so. I have to say that technology is a tool, and obviously if you're an artist and you have better tools, you might paint better pictures. But giving someone the tools to draw does not make him an artist* (Bruno).

Introduction

The preceding chapters examine the practices of using computer technologies in academic work and indicate that their integration in teaching, learning, publishing and research is fraught with contestation. Moreover, as has been made clear, the aesthetic, ideological, and pedagogical nature of the contestation is indicative of the ways in which the use of technologies in scholarship significantly shifts academic culture. Following this examination, I would now like to shift the focus to the discourses within which the technological practices are framed.

These practices of integrating technologies in academic work in order to create knowledge are associated with two overlapping and different discourses. One is the institutional discourse of policies and initiatives that by implication mandates the deployment of technologies in academic work, and the other is the academic discourse, focusing on the role of the academics in bringing together technologies in their work and on the role of the technologies in the creation of knowledge. The analysis is structured in terms of this binary, where one discourse is a critical analysis of the other, because this is how the respondents framed it themselves. There are two different discourses in which academics talk about pressures. One an institutional discourse of pressure that is different from the goals of academic culture, and the other an academic discourse.

The institutional discourse is based on, and perpetuates, a set of assumptions about the information society negligibly taking into account the culture of the academy, particularly those elements that have to do with the role of academics in making decisions related to their own work practices. The academic discourse is predicated on, and reproduces, a set of assumptions surrounding the production and construction of knowledge that characterize dominant academic culture. Both these sets of assumptions are implicated in certain relations of power and knowledge, explored through the themes of normalization and freedom. In this chapter, I follow Foucault's methodology in looking at discourse formations. It analyzes the discourse formations that respondents perceive to be exerting pressure on the implementation and on the uses of technologies. It is about perceptions of pressures; whether or not these pressures exist is irrelevant. The perceptions are important because they are part of what constitutes the norms of academic culture, which, in turn, can actually influence how technologies are being used.

Institutional Discourse: The Will to Technology

The institutional discourse is used here as a framework not primarily for how academics are conceptualized within technology policies and initiatives but how they conceptualize themselves. The concern is not with how technologies are actually shaping the practices of instruction and research, or with how administrators also have a separate set of pressures to deal with (competition, globalization), but rather with the academics' perceptions of pressures.

Largely unaware of, or unwilling to acknowledge, the contested practices, the use of various computer technologies is being mandated by education technology policies

and initiatives implemented at the national, provincial and institutional levels in Canada. The policies and initiatives are perceived to define the institutional discourse on technological integration in the universities as the corporatization of education, the centralization of decision making, and the homogenization of academic practices.

The term 'Education Technology' is used here to refer to the gamut of policies and guidelines established by governmental and institutional administrations that directly mandate and regulate the use of computer technologies in higher education. This is distinguished from the term 'Technology Education', which refers to an emerging field of training for educators to integrate technology into the curriculum, administrative and support functions[1]. In outlining the policies and initiatives, this section identifies the governments and institutions as major actors involved in technological integration in higher education providing the external context, fueling a perception by academics of the inevitability of the inclusion of 'online education' in conventional universities. The institutional discourse binds the production and construction of knowledge with notions of technological progress, and locates knowledge firmly within a model of successful transmission of information and electronic reproduction.

Governmental Policy

Mirroring changes in the industrial market place, the integration of technology in education is being aided by evolving national policies and initiatives that follow the recommendations of the Information Highway Advisory Council (IHAC) Report, *Preparing Canada for a Digital World* (1997) commissioned by Industry Canada. The report reiterated the centrality of lifelong electronic learning to

the Information Highway, focusing on the need for policy research mandated to the Council of Ministers of Education of Canada (CMEC) in cooperation with Industry Canada and the Government of Canada, through its Human Resources Social Development (HRSDC) unit.

Cooperation between the government, industry and education regarding technological integration was firmly established in the early nineties with the creation of the Canadian Network for the Advancement of Research, Industry and Education (CANARIE). This industry-lead consortium helps stimulate the development of the communications infrastructure; and distributes funds for technological integration at all levels of education. CANARIE established CA*net3, the high bandwidth Canadian Internet connecting schools, universities, and industry.

Furthering the cooperation, the Government of Canada, through the Human Resources department Social Development Canada division, established the Office of Learning Technologies (OLT) and Networks of Centers of Excellence (NCE) program. Both the OLT and the NCE promote and fund technological integration in higher education. The OLT's mission is to work with partners to develop new, or enlarge existing, possibilities for learning with new technologies. The Networks of Centers of Excellence supports research, testing and evaluation of new models of learning with new communications and information technologies.

In this continuing vein of cooperation with the government, Industry Canada helped to fund the SchoolNet project in the early nineties aimed at "helping students build skills that will allow them to be more marketable, to transfer from their studies to employment as quickly as possible, and to be well positioned as entrepreneurs in

[1] Such as the training programs offered by the McGill University's Instructional Communication Centre.

the new global economy" (Beattie and McCallum, 1997:12). SchoolNet provides Canada's educators with online access to resources that in turn help students acquire skills: Internet research and communications. SchoolNet initiated the online journal, Canadian Journal of Behavioral Sciences (CJBS 1997).

Recently, the CMEC and Industry Canada established an Advisory Committee for Online Learning to study new technology in learning. The committee produced a report entitled *the e-learning e-volution in colleges and universities* (2002) stating that for opportunities enabled by information and communication technologies to effectively build a knowledge based society change has to occur. It called on continued federal and provincial funding and support for the implementation of e-learning stating that, "the extent to which Canada benefits will to a considerable degree be determined by how quickly and effectively our institutions embrace online learning" (2002:5). The committee proposes a pan-Canadian action plan to accelerate the use of online learning in post-secondary education. The sense of urgency of the plan of action is quite evident, under a language of technologically enabled 'synergies' and 'economies of scale', driven by economic rather than educational factors and failing to distinguish between the different kinds of post-secondary education.

The drive towards technological integration in higher education is evident not only at the national level but also at the provincial level. While Canadian Provinces vary in their specific educational technology policies[2], they share similar definitions of technologically mediated learning. In existing and proposed frameworks for

[2] For a detailed description of the technologically related policies and initiatives in the Canadian provinces see Lewis, Massey and Smith, 2001 book *the Tower Under Siege*, particularly Chapter 4, pp.46-88.

technological integration in universities, technology-mediated 'learning' refers to both those instances where educational technologies are used as a complement to face-to-face learning, and where programs are offered completely online. Frameworks also provide definitions of 'learner-centered' as focusing on meeting the learning and developmental needs of the learners it serves, and of 'open' learning as referring to an instructional system in which the many facets of the learning process are under the control of the individual learner, who decides what and how to study, under tutor guidance.

In the province of Québec similar policies are being proposed and developed by the Ministère d'Education du Québec (MEQ). The MEQ has facilitated the development of 'telelearning' technologies strategically emphasizing training and support mechanisms. Within a context of rationalization and consolidation of the post-secondary education in Québec, in 1997 the MEQ announced funding for telelearning technologies to be directed at universities. Specialty funds are made available for the training of future teachers and educators in the use of new communication and information technologies, and for the provision of equipment, especially in the Education Faculties. The MEQ also supports Télé-Universté, a distance learning institution in Montréal.

Policy research is also being conducted by the Conférence des Recteurs et des Principaux des Universités du Québec (CREPUQ). CREPUQ is a private organization comprised of faculty members from all Québec universities. Within this association there is a sub-committee on technology of information and communication (SC-TIC), which coordinates the technologies in information and

communication in higher education. Representatives of the organization and the committee have been in consultations for the last few years, and the process is expected to result in a provincial policy on the integration of technology in higher learning institutions. The committee issued its report in February of 1999 entitled *Rapport sur le développment des nouvelles technologies de l'information et des communications dans les réseau universitaires québécois.* In this report the vision set for technological integration in higher education by 2010 is highly congruent with national and other provincial visions.

The governmental policies assume that a change in paradigm is necessary because of budget cuts, public criticism of higher education, and competitiveness from the technologically enabled education. More importantly, governmental educational technology policies tend to be driven by economic and political mandates within a climate of 'cooperation' between the government, industry and education. Cooperation is significant in that it signals a tendency towards the corporatization[3] of education, where academic courses can increasingly be obtained using the technologies provided by privately owned, therefore for-profit, corporations.

Governmental policies highlight the benefits of learner-centered, marketable skills, open and life-long learning, but at the same time they tend to advocate a commercial approach to higher education. This is different from the goals of academic culture. This commercialization is perceived by my respondents to be in conflict with the values of academic freedom and autonomy. This tendency towards corporatization seeds a process of institutionalization of scholarship that germinates with policies and initiatives implemented at the institutional level.

Institutional Policies and Initiatives

Specific educational technology policies and initiatives are being implemented at the institutional level, primarily trickling down from the national and provincial governments, and enacted by specific units of the central administration of the Universities. The units are responsible for the technological integration in teaching and learning, publishing and research: the Instructional Communications Centre (ICC) at McGill University and the Centre d'etudes et de formation en enseignement supérieur (CEFES) at Université de Montréal. The bases of these units were created in the late 1960s, when there was a rapid increase of students at universities with the beginning of the baby boom generation, and departments were faced with a tremendous increase in enrolment, especially in first year courses such as physics, chemistry, biology and sociology. In order to address this increasing number of students, the decision was made to use remote teaching using television, where two or three classrooms full of students all watching the professor via the television set. This required some coordination and was the main *raison d'être* for the original creation of the units. Eventually the units also became responsible for the provision and support of all audio-visual equipment.

Today, and paralleling the creation of the counterpart units at the governmental level, in addition to the traditional loaning of equipment, maintenance of facilities in the classrooms and television production centres, a division within these units has been created that deals specifically with technology in education. At McGill University this division is under the umbrella of 'Learning Technologies', and at Université de Montréal

[3] For evaluations of this development, see Cohen, 1993; and Hunter at al, 1991; Readings, 1996.

it is under the Intégration des TIC[4] dans L'enseignment and a specific team called SUITE[5]. These divisions are the central institutional facilities for the use of technologies in education and course ware production, including the Web CT server and PPT presentations. The mandate of these divisions is firstly, to make decisions on the use of computers by both professors and students in terms of what a personal computer will contain and how it will be used. Secondly, there are software issues, which involve decisions about institutional wide enterprise systems, and associated provision of support.

Decisions about technologies are, thus, centrally made. Although there are designated institutional committees that oversee the use of technologies in academic work where there is some faculty representation, these committees were first formed in 2003. The committees do not have power to allocate funding; rather their sole mandate is to make recommendations and report to the director of the ICC at McGill University, and to the director of CEFES at Université de Montréal, who are the central decision makers concerning technological matters at the institutional level. This centralization of decision making is a source of high level contestation as will be seen in the section on the academic discourse, mainly because it is perceived to curtail the freedom of academics to decide for themselves which technologies to use in their work.

The administrative units have purchased the license for the use of the Web CT server as the institutional educational technology software or standard platform for 'online learning'. In fact, close to eighty per-cent of Canadian universities, and fifty five per-cent of United States universities, have made similar decisions, as Bruno, the Director of ICC, reminds us. The WebCT server is available in ten languages and in sixty

[4] Technologies de information et communication.

different countries. The institutions that are not licensed to use WebCT are using similar web-based systems, such as the First Class or Open Course Ware, or Knowledge Board.

In addition to deciding what specific technologies to adopt university wide, the administrations are developing various policies mandating the use of these technologies. At McGill University, in the fall semester of 2002, the administration introduced the policy of submitting grades through WebCT (as well as through the traditional student information system). No such policy has been adopted by Université de Montréal at this time. However, there is a requirement that professors migrate the course material they currently have on individual course Web pages to the WebCT server, as Margarida points out in the academic discourse.

Besides features that relate to teaching: reading materials, making information available, and discussion groups, the WebCT server also allows for the integration of the administrative aspects of academic work, such as the possibility of tracking the students' marks and sending them to the student information system. Consequently, as student enrolments change when courses are added or dropped, the professors' lists automatically change. This integration of the WebCT server with the student information services is technological convergence that is highly propitious to the centralization of decision making.

The WebCT system was adopted, precisely because of its capabilities of convergence between separate information systems. As Bruno contends,

> it seemed to be the one that at the time offered the most tools and was also the most robust. The problem with many of the other platforms is the fact that the tools may have been useful but they were not robust, and did not allow the integration of diverse

[5] Soutien à utilisation de l'Internet et des technologies dans l'enseignement. For more details see www.suite.umontreal.ca/

> systems, various things did not work and you'd find out from colleagues and other universities that they were having to fix all kinds of things.

In other words, the adoption of the server was driven primarily by technical, rather than pedagogical concerns, namely that it was the most robust while offering a large number of tools.

Since 1998, both Universities have introduced two versions of the WebCT server and are considering replacing the previous version with the latest available. Paraphrasing the director's explanation at McGill University, transparency to the user is important and the previous system was inefficient (uses flat files, and it is not a relational database) in the way it stored data and was more vulnerable to data corruption. This problem increased when there was the shift to the second, 'Campus', version, which contains more tools and allows professors to do more within the system. The higher number of tools and the fact that 'more' can be done with the second version, now necessitates a third version. Although the seeming constant change and upgrade in servers has understandably caused several problems for both professors and students, in fact alienating many from using the technologies, the administration maintains an optimistic slant, and in the words of Bruno, is "looking at the long term solution of moving to Vista or a competing product that uses Oracle, rather than the current SUN database structure". Although specific software may change over time, decisions continue to be driven by technical imperatives and to be centrally made.

Despite the problems, the evident pride in the administration's selection of the server has not diminished. In the words of Bruno, "McGill is the leading user of WebCT in Quebec, and one of the leading ones in Canada, in terms of the degree to which we use

it, the version, and the complexity of the product. We're trying to do a lot of things with it". He is referring to the technical convergence of the WebCT server with other information systems.

This convergence made it possible to develop the policy for submission of grades on the server. Technological convergence, however, is more than a technical two-way data transfer. Importantly, it integrates the administrative element of academic work within the teaching element. This is a tremendous change from conventional teaching, converging two previously distinct facets of academic work, and is radically different from the way teaching has been done previously where it was largely the professors' prerogative to develop their own teaching in different ways. As Jessy laments "unfortunately it's not even focusing on pedagogical uniformity" but rather on technological uniformity. Uniformity is seen to reduce rather than augment choices of how to do academic work. Furthermore, technological uniformity is perceived to precipitate the homogenization of teaching practices, which is not a goal of academic culture.

Insisting, however, that professors are not required to use the specific technologies adopted by the University, Bruno contends regarding the Web CT server, that "it's not compulsory, there is nothing to say that you can't use a competing product". However, he adds that "there is no support for anything other than WebCT support. The only policy is that McGill will not support multiple platforms". Although Bruno maintains that, "faculties are perfectly free to do whatever as long as it fits with the university wide", there is, in fact, no choice in terms of the support provided, and no diversity in the technologies that are implemented institution wide. Professors and

students are free to adopt the technologies mandated by the institution.

In addition to the implementation of the Web CT server and subsequent policies for its use, McGill University instituted effective January 2004, a university wide email policy, stating that "email is now recognized as of the official means of communication between the university and the students"[6]. At the departmental level this policy has been unofficially followed for the last few years in many departments. This policy, rather than contributing to the homogenization of academic practices, acknowledges a more efficient way of official communication where every professor and student is required to use a McGill email address, rather than, for example, a Hotmail or Yahoo address.

The institutional policies, and consequent centralization of decision making and homogenization of academic practices, contribute to my respondents' perception of the existence of an 'information czar' *modus operandus* in their universities, as will be evident in the academic discourse. Centralization and homogenization are very different goals for traditional academic culture. The values and goals of academic culture have to do with academic freedom and autonomy.

In addition to the development of institutional policies, there are various initiatives developed by the Office of the Deputy Provost and Chief Information Officer (CIO) promulgating the use of technologies at McGill University. The Academic Laptop Programme, part of the CIO's 'PC Procurement' plan, is one such initiative. This program promotes the use of the WebCT server by offering professors the opportunity to apply for a research grant in which the purpose is to propose to use WebCT in one of the courses they are teaching, in exchange for a laptop computer and associated Microsoft software products. The Laptop programme aims to help academic staff (tenured, tenure

track, and faculty lecturers) purchase laptop computers to be used for teaching with the WebCT server[7]. This program extends the provision of laptops to newly-hired faculty, in an effort to further promote use of the server at the University.

Further initiatives include free email access from home for continued use of the Web CT server for those who have participated in the programme. Additionally, the Exemplary Course Project (ECP) is a program, initiated in the 2004 academic year that "seeks to encourage and recognize excellence in online courses developed within WebCT"[8]. The ECP is being administered under the newly appointed position of Senior Educational Technologist in the Office of the Deputy Provost and CIO. This position was created as an attempt to bridge faculties and the CIO with regards to technologies in scholarship, and its main mission is to promote the use of the institutionally adopted technologies in discipline specific contexts.

At Université de Montréal similar initiatives have been, and continue to be, developed mandated by DGTIC and CEFES. Specifically, it has become a common practice to grant funds for research applications, which have the sole purpose of proposing to use new technologies. Many professors have welcomed this initiative in order to acquire a specific computer and related software. Funds are also available for the migration of material from individual course Web pages onto the WebCT server.

The educational technology initiatives at the universities are designed to encourage the use of technologies in academic work. They are directed towards the professors, and the students who are willing recipients of the administrative incentives. A major and highly praised initiative that is directed at the students has been to create

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[6] www.mcgill.ca/email-policy/
[7] http://www.mcgill.ca/dp-cio/spp/acad_pc_program/

'wireless zones' in university's libraries. This is intended to encourage the increased use of laptops by students. It also indicates that the administration is considering portability as a priority. As Bruno points out, reflecting the administration's views of the University, "we're very keen on lap tops and ultra lights (under 3 pounds). To our way of thinking, a computer should be no heavier than a textbook, hopefully lighter, but something people will carry around".

In terms of technological use by the students, the universities are taking a two-track approach, based on differences between graduate and undergraduate teaching. In terms of conventional course teaching, Bruno remarks that, students at McGill "are interested in having a one on one live interaction with the professor and are interested in their fellow students who are from all over the world and they want to come to Montréal, the city". Recognizing that undergraduate students do not want a replacement for the interaction and want to be on campus, he contends that the question becomes

> 'how do we integrate technology with conventional teaching'? The students are synchronously here with the professor and they also use their laptops. The professor is using WebCT, so the professors have a laptop, the students have a laptop, and outside the classroom people are communicating through WebCT.

The belief is that students will use the ultra light laptops,

> if you have a very portable device, then students can put up their feet, and actually put the ultra light device on their lap. So that is one of the advantages of an ultra light device, we don't want to be tattered down. This is part of the whole concept we're moving to, which is wireless, its portable it's easy to use.

Portability and wireless zones might lead academics to use laptop computers in and outside the classroom. However, as Bruno cautions, other "universities that required their students to use laptops in the classroom received significant complaints from

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[8] Email sent out to instructors

professors saying that it is not a benign decision. Instead of class material students would check their email, or surf Web sites". Students would also play computer games which have sound effects that were distracting to fellow students. Given the potential for disruption, Bruno contends that, "the issue becomes how laptops can be used in the classroom and how professors can control how students use it, because it is quite clear that the potential for disruptive uses requires a measure of control". In spite of this, and also being demonstratively ambivalent, he insists that the use of laptops can be beneficial,

> we have found that one of the positive things that you can do is polling for feedback in class, as all students are hooked up the professor can pose a question and students can express their opinion or the professor can assess whether students are following what is being presented. So we think that there are ways to use lap tops to improve teaching.

At the same time, verging on the paradoxical, there is an expressed admission that "the use of technology in the sense we've described is very much ancillary to the main way courses are taught". It is not obvious that instant polling enhances learning in a more efficient way than just asking for a show of hands and being attentive to students' cues. Striking a balance between the potential for disruption and the enhancement of learning seems an elusive goal in institutional discourse.

Portability is an institutional goal for undergraduate education as well as graduate education, albeit in different ways. At the graduate level, "these are, in many cases, people who got their undergraduate degree at McGill, and they want to get a masters degree. They do not want to come to campus, so we might consider online courses". It is interesting to note the discrepancy between these comments of using technologies for graduate level courses, given that, as examined in chapter two, the uses of technologies for graduate courses is kept to a minimum, as professors' perceptions are that it is not

conducive to high levels of learning. In addition, when technologies are used, it tends to be primarily for transmission of course information.

At the same time as there is a tendency towards wireless and portability, which are institutional rather than academic goals, there has been a centralization of the university's systems, in terms of both software and hardware. As the director asserts, professors

> have administrative functions and they use the McGill backbone. They have what I have here [in the office], a computer and a lap-top that they might want to use in their teaching. Our feeling is that this should be all one computer, rather than have to synchronize the two computers. So we have been putting some emphasis on how that ultra light then plugs into something and then you use your large monitor and keyboard and all that but rather than your CPU you use the lap top for that. Than further if you want you can use it at home.

This is a vision of integration of classroom use, office use, and home use (as professors are not as likely to spend a lot of time in the libraries using a wireless), a kind of centripetus portability. This vision contributes to a predisposition for using technologies, and, furthermore, to such use appearing to be a natural progression for university education.

In all policies and initiatives the hardware and software is being specified by the institution, not the professor or the student. Although policies and initiatives present technologies as tools for the enhancement of education, evident in terms such as 'online learning' and 'learning technologies', there has been little parallel research addressing the effectiveness of these policies in relation to actual learning. Although the WebCT server is promoted as an 'educational platform', it is used primarily for course management, and only sporadically as a discussion forum. The patterns of use described in the previous

chapters clearly emphasize the management and administrative aspects rather than pedagogical uses of the technology. Technology policies and initiatives tend to be driven not by educational but by economic and political mandates.

One cannot be entirely ideological in attributing causality of technological integration to the economy and political arena, as there is an undeniable individual demand motivating the adoption of technologies. Some respondents cited using technologies because of their individual propensity to use new technologies. Individual personality traits, such as curiosity and liking to experiment with new technologies, as well as an externally imposed social willingness to be at the avant-garde of technological progress are important driving forces in integrating technologies in scholarship practices. Educational technology policies tend to support technological integration and, to a certain extent, by implication they advance a market-driven educational change, which sets the economic and political context driving the integration of communications technology in university education.

However, the forces driving the integration of technology would appear to be principally economic, where corporations, such as the Royal Bank and Microsoft, sponsor technological research through the provision of funds. Educational technology policies raise the important issue of deciding which university is responsible for conferring the degree or credentials when a 'learner' can take courses online from many different universities, as well as the definition of credits when portions of courses can be delivered online. More importantly, the vision of technological integration of academic work in one computerized apparatus advanced by the policies and initiatives signals an impetus towards the normalization of technological practices that is against academic

culture's goals of independence and autonomy.

The analysis in this section maps an institutional discourse that according to my respondents tends to fuel a potentially undesirable process of institutionalization of scholarship involving the corporatization of education, the centralization of decision-making, and the homogenization of academic practices. Corporatization means that education is reconfigured within a business model, where professors' and students' interests are confounded with market interests. Centralization of decision-making involves the erasure of academic agency in decisions related to technological implementation in academic work. The homogenization of academic practices involves technological uniformity, leading to identical scholarship practices by academics.

The institutional discourse, as analyzed here, is not a full report on actual pressures, rather it represents academics' perceptions that pressures are inherent in policies and initiatives for technological use. The perceived pressure implies relations of power and knowledge that undermine the notion of academic freedom as the foundation of academic culture and contributes to a redefinition of knowledge as the successful transmission of data and information, and as electronic reproduction.

Academic Discourse: The Will to Knowledge

The emergent academic discourse with respect to the implementation of technologies, as examined in this section, demotes credence in the dominant ethos and social predisposition for technological integration being advanced by the institutional discourse. The academic discourse is about the perceptions of pressures that may conflict with the traditional culture of academics. The academic discourse focusing on the

production of knowledge, demonstrates reluctance towards the institutionalization of scholarship. The process of institutionalization of scholarship is cemented by the perceived lack of academic agency concerning technological matters that relate to academic work and is unequivocally challenged by the academic discourse of disenchantment and contestation as the following examination shows. The academic discourse can also be understood, as the contestations in Chapter Two are, as a concretization of discourses, the genesis of which predates the implementation of the technologies. The academic discourse is analyzed in two areas: first, in the role of academics in integrating technologies in their own work, and second, in the role of technologies in the production of knowledge. The role of academics in integrating computer technologies in their work is evaluated in terms of agency, particularly in input into policies and initiatives, in the degree of choice in using technologies, and in the institutional support for using technologies. The role of technologies in the production of knowledge is analyzed in terms of facilitation of academic work.

The role of academics in integrating technologies in their own work is characterized by my respondents by a lack of agency that is contrary to the notion of enhanced education when those delivering the education are not consulted or included in decisions concerning technologies in education. The lack of agency is directly related to the institutionalization of scholarship. The academic discourse contests such institutionalization and in doing so disassociates the creation of knowledge from its reproduction. Further, the institutionalization of scholarship is contrary to traditional notions of academic autonomy and freedom, as reflected in the comments of my interview subjects.

Role of Academics in Integrating Technologies in Academic Work

The role of academics in deciding which technologies to use for their own work is an issue of agency. Agency is conceptualized in terms of the extent to which professors and students perceive that they have input into the institutional decisions related to technologies; in the nature and amount of institutional support for the use of technologies; as well as in the perceived degree of choice in integrating technologies in their work. The lack of agency in these areas is an important source of contestation as it underlines the institutionalization of scholarship.

Academics' input in educational technology policies and initiatives

The academics I interviewed unanimously point out that they have no input into decisions concerning what technologies should be adopted university wide and what policies and initiatives should be developed regarding academic work. Consequently, they perceive that increasingly they have little choice but to become dependent on computer technologies. This lack of academic input into the policies and initiatives developed institutionally is derived from the centralized approach to decision making described in the institutional discourse above.

To paraphrase the words of my respondents, there have been no consultations or requests for input from them in matters technological. Remarking that she was not asked about technological developments at the university, partly because of her junior status, Isabel points out that,

> I do not feel that my opinion matters, partly because I started in 2000. So a lot of stuff was under way already. But I don't know how policies are made, specifically the administrative stuff. I don't think that there is a lot of faculty input on that. I think decisions are made for fiscal reasons and administrative reasons and it is another

thing that Profs. are suppose to absorb.

She speculates that decisions are made to deal with budget cuts and "it is a way of cutting staff and I am not convinced that there is a lot of faculty input in that. I certainly have not had any".

Isabel also regrets that the issue of lack of input is not exclusive to the institutional level but that it extends to the departmental level,

> even at the departmental level, I wish it was something we talked about and had a departmental position on. We don't have policies or agreements, or even disagreements, at the departmental level on this. It is kind of done on a one on one kind of ad hoc basis and we just sort of get the policy and we say, 'oh, ok' and that is how it goes.

Referring to the implementation of the Web CT server, Raul contends that the creation of the pedagogical centre at his institution, although an attempt to promote and support the use of technologies in teaching and learning, is centralized and does not reflect the needs of individual faculty and disciplines. He laments the high degree of centralization concerning the technologies adopted by the institution,

> we don't have a choice and I don't like that. I already made my opinion known. The people who chair the pedagogical center, we discussed and I told her: 'I understand that we adopt WebCT but it means that we can't use anything else because the University doesn't provide anything else'.

Although the chair of the pedagogical center is "much in agreement with the idea that we should provide tools but give the professors the right to choose the tools that are most suitable for their teaching", in fact, this is not the approach taken. The decentralization approach preferred by academics is based on differences in content of disciplines and approaches to scholarship, where using a uniform system creates "problems of styles, of features, there are problems of many different dimensions".

However, Raul understands the constraints from an administrative point of view.

> The problem is that it is expensive, and it would be unmanageable, because the University is centralized, everything comes from the top so people must work within the system, so to have many and to manage many, there are different codes, different users, it becomes complicated.

The lack of input concerning technologies and associated high degree of centralization is lamented by academics who echo an information *czar* sentiment. As Raul remarks, "I hate it because it's so bureaucratic. It is a top down approach, I know that networks need some top down decision making, they need that, but it is too concentrated, too authoritarian, I don't like it".

While the administration does not request input from most professors and students, there are some professors (not students) who have the opportunity to make recommendations to the extent that they are involved in specific technological committees. The level of institutional involvement in committees, or sub-committees is therefore related to the degree of agency perceived, as José Luis clarifies,

> I think that as an 'ordinary' professor I have had very little input into any policy, because I think its being developed without really a great deal of consultation. It seemed like the way the University absolutely had to go, it was a no-brainer: to be at the vanguard, on the bandwagon. However, because of the way in which I have gotten involved in things over the last few years I feel closer perhaps to being able to influence some of the decisions that will be made in the future.

Recognizing the need for faculty and student involvement, the situation at McGill is apparently changing as indicated by the creation of a new position in the Fall of 2003 in the Office of the Deputy Provost and CIO of the Senior Educational Technologist functioning as a liaison between the administration, faculty and students. The position is oriented towards assessing the pedagogical aspects of technological integration at the

University. However, the policies that are currently in place were conceived without formalized input from the academic community at large. Although the creation of this position indicates an awareness of the need to involve academics in the decisions regarding technologies, there is no exact mechanism by which this will be achieved.

Melissa points out that centralization of decision making is contradictory to the culture of academics and that the hierarchy of the University should in fact be decentralized. She contends that prior to the introduction of new computer technologies the level of decentralization was significantly higher, underlying the notion that the increase in centralization is related to the increase in technological implementation. As she claims,

> we talk about a university, it is bottom up because all of us in our own ways have expertise and 'they' in this University at least, were once 'us' and many of them go back to being professors after they finish their terms in office of vice-principal or dean. That ought to facilitate the bottom up and top-down sort of meeting in the middle collegial atmosphere. But that has been, for a number of reasons, including technology, and some less apparent reasons, not the case over the last little while.

Similarly to professors, students perceive that they have limited input into the technologies adopted. They point out that there is an important distinction between being able to email the web master at the library with suggestions for changes to the library interface, and those suggestions actually being implemented. Tommy points out that, students have some input to the extent that they can provide feedback to the professors about, for example, what information they would prefer to be available on the Web,

> as a student giving feedback you have an input. It's a very small role but in the end it does affect how things are being used and then you get into that loop of how things get used influence how people think about it in a way.

Many students believe that there should be more choice of technologies because part of their tuition includes a fee for information technology. As João claims, "if we are going to have to in the end pay for them, we should definitely have a choice in what kind of technologies we want. But then again, a lot of direction concerning technology comes from the top".

Not only is there no solicitation of input from academics, no specific consideration is given in the institutional discourse to systematically disseminate technologically related information to faculty or students. At McGill there is no central way of distributing information, although there is a newsletter from the computer centre that is published and distributed within the University. At Université de Montréal academics received, last year (2003), a CDROM package from the Direction générale des technologies de l'information et de la communication in which the new technological developments of the last three years, including the implementation of Web CT, were outlined and the benefits and enhancements explained. The package contained a letter, that in the words of Raul "was almost written in gold", from the director with the explanation of new services that they are providing. However, the professors are unimpressed by the initiative regarding it as an attempt in "selling" the technologies.

Despite these methods of disseminating information about institutional technologies, there is no systematic manner by which this is done. As Isabel remarks,

> I sort of get sporadic announcements, so that I knew about the Laptop program and a few weeks ago I got a pamphlet about the grades on Minerva and/or web CT. I have this very spotty knowledge of the initiatives. If I get a memo that could potentially influence me, then I am aware of it. The rest of the time, have I gone and looked up a policy? No!

Typically, professors receive information and announcements of new developments

sporadically in pamphlets, or in the faculty's web sites. Most respondents find out about the technologies they are using, or might want to use, serendipitiously from personal connections, from colleagues, from their students, and at conferences. Others are aware of the technologies because it becomes part of their research projects.

Academic's input into institutional support

As demonstrated, academics do not have input into the policies and initiatives related to technologies and they also have no input in the institutional support provided for using those technologies. Institutional support for teaching and learning is provided centrally by the ICC and the SUITE teams at each university respectively. Some faculties – those that have the financial means independent of the central administration – offer their own services. The central units provide workshops on how to use the technologies, such as email, Word, PowerPoint, the Web and the WebCT server. The workshops are free of charge for professors (and some for students). This support is of a technical nature, for example, in how to upload Word or Excel files onto the WebCT server. The technicians conducting the workshops, for the most part, do not have pedagogical training or discipline specific subject matter knowledge. For example, there is no differentiation in the workshops between a Physics or Communication course.

Professors perceive the institutional support to be insufficient and inappropriate. The main concern is that there are a limited number of workshops scheduled, and that these are presented in terms of generalities and without discipline specific context, which is of limited use for many professors who equate the delivery of the workshops with reading an instructional manual. Some consider this type of instruction to be un-academic

to the extent that specific questions in terms of specific disciplines and contexts are neglected in favour of generalities, which can easily be self-taught.

The available support is of a technical nature and there is are serious concerns raised by professors and students, specifically graduate students, that there is no pertinent education on how to use the technologies in a pedagogically effective way, and about what constitutes appropriate uses. Respondents claim that, in order for technologies to become a useful resource, students and professors need to be educated about better practices with the technology. Support is limited to centralized technical resources. This is highly contested by professors who clearly favour a decentralized approach to the provision of support. José Luis remarks that the question of how to provide support for professors in their activities, whether it be in the classroom or administratively,

> is one that I do not believe you solve by giving workshops. You solve by having more support people available to help and that's exactly what [the CIO] has done over the last six months or so now. Support people associated with each faculty or administrative unit or whatever, there is a person at the end of a phone line and you can phone up. And for me that is far more efficient than insisting that everybody goes and takes a workshop to learn how to upload grades.

Raul concurs and adds that those providing support,

> should be knowledgeable of pedagogy with technology. I proposed for them to try to make an "équipe volant". I am very much in favour of having instead of a pedagogical center, to have more distributed centers that could serve people locally. For example, we have the Faculty of Education, Psychology and Biology in the building, so we could have a learning center to help us and being small the center could have 3 or 4 conferencing systems and it could be managed case by case[9].

Localization would provide a contextualized, discipline specific approach. However, this approach is not espoused by either of the Universities.

There is a prevalent perception from my respondents that a disjuncture has emerged between the technologies used by academics and the technologies adopted by the institution, and between the support they receive from the institution and the support they need. Professors posit that this situation is partly due to the fact that support is limited to centralized technical resources, and partly to the lack of knowledge of how to use the technologies in scholarship. As José Luis remarks,

> that is not deliberate, I think it's that many of the people at the reins of power in this place do not understand the issues, people like [the CIO], and its not like it is deliberate misdirection but over the last couple of years the conversations that I have had with him and other members of [the teaching and learning community] demonstrate very clearly that that's an issue that he does not understand.

His point is that he feels the administration is not tapping into the actual needs of the professors. Rather, it arbitrarily adopts certain technologies he suggests, which may not be the most appropriate, for all disciplines and contexts.

Professors emphatically highlight that if the aim of technological implementation is to improve the quality of education, then a decentralized approach to the provision of technologies is clearly preferable. Academics' main recommendation, in order to enrich the meaningfulness of using the technologies in their work, is that there are four elements of support that need to be provided simultaneously: technical, financial, pedagogical and human. They claim that, while some technical and financial support is provided, it is too generalized and centralized to be useful. Additionally, the support provided is tremendously lacking in pedagogical and human elements.

Underlining the contradictions inherent in the administration's provision of support for using technologies, Melissa remarks that professors, rather than relying on

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[9] Interview conducted in both French and English, this quote was translated by the author from the French.

institutional support, have succumbed to a common practice of buying the technological equipment and software they require with funds from their own research grants.

> I don't see the university being very supportive of our use of technology, certainly not a variety of technology. This lap top program is the only computer I have had that was paid for by the university, I don't know how it is in other faculties, but in our faculty all computers I have bought out of my research grants and I resent that very much, that I would use my research grant money to support the university's function.

There is a perceived disconnection between the University's insistence and promulgation of the technologies for academic work and providing adequate resources for supporting its use.

The financing of technologies used in all academic work from research grants is the genesis of a high level of academic resentment towards the administration as teaching, for example, is considered an institutional element, compared to research, which is in many cases funded from outside the university. As Melissa claims, "the idea that you should support your teaching from your research grants is just plain wrong and I resent that". Raul agrees highlighting the inadequacy of institutional support,

> I had to buy another computer because the computer the University gave me was not enough to install 'photoshop', I teach multimedia courses, I need to have this. I had to buy with my research funds, it was great to have a new computer, but it is because of teaching not because of research. So you don't have any kind of support.

This practice of subsidizing technologies used in teaching with funds from research grants is contested by all professors I spoke with. On the one hand, adopting independent technologies means that the institution will not provide support for those technologies. On the other hand, the institutional support provided reduces the technological choices in terms of teaching and administration. The drive towards

uniformity for managerial purposes constrains the pedagogical variation. At the same time uniformity is understood as necessary because the institutions cannot provide the support for multiple platforms, as they must be able to compete in terms of efficiency with other institutions. The idea of efficiency tends to be measured in economic rather then educational terms, and economic efficiency tends to drive the decisions being made. The provision of exclusive support for technologies that are adopted by the institution confirms a tendency towards both the corporatization of education and homogenization of academic work, which are not academic goals.

Academics' degree of choice in using technologies in their work

The issue of agency is manifested in the identified lack of input in the policies, initiatives, and support developed institutionally. Additionally, it is my respondents' perception that there is a disturbing lack of choice about the specific technologies to use. Professors' degree of choice is increasingly being limited as the integration of technologies leads to an enormous dependency on particular technologies, directly relating to the homogenization of academic practices.

Asserting a low degree of choice in the use of email for communication among and between academics Isabel points out that, "there is no choice on using email, it is gruelling and it has been an interesting process to try to set certain boundaries where you say 'ok 24 hours is not a bad response time'. I don't have a choice on email and I don't want one either, I think it is a useful practice". Although useful, parameters have to be specified in terms of use. Predating the university wide email policy, professors have developed their own email policies, as seen in Chapter Two. Although this development

indicates a degree of choice in the amount of time spent on using email, the institutional email policy is considered an undeniable imposition.

While some professors feel that having tenure status affords them a higher degree of choice, "I have tenure so I have a choice", they realize that the choice of technologies turns into a *de facto* dependency on technologies specified by the institution. In the words of Melissa, "I have no choice in the technology I use. I give you a personal example. I am a Mac fan and I had to switch to IBM and clones because of MINERVA, which you can't do from Mac". This confirms the tendency towards the corporatization of education whereby academics' choices are reduced to particular commercialized products.

Students, like professors, perceive that they do not have a choice in using many of the technologies especially email. As Luisa indicates,

> not really, not at all actually. Within the department they post things on there, special announcements, scholarship deadlines, summer jobs, what's happening, so if you don't have an email you're definitely not going to hear about it. Well you might talk to a friend that tells you. But if you're not up to speed you're out of the 'information loop'.

It is assumed and expected that all students have email and learn how to use it.

Regarding the WebCT server, if the professor uses it, the learner does not have a choice and the only choice is the extent to which it is used in terms of classroom discussion for instance. As a co-instructor, using WebCT for discussion of the class readings, it was clear from the evaluations conducted that for my students logging onto WebCT was an extra activity in an already busy schedule.

Under the language of upgrading, there is also no choice but to keep changing, or updating, the technologies used. Older technologies that might have been preferable by some academics are simply replaced by new programs. As Iara remarks, "you have to

start again. For example, the documents that I have on floppy are today becoming obsolete with CDROMs". The CDROM is replacing the floppy disc as most computers now do not have an embedded floppy disc drive (some computers have it as an extra attachable drive that can be plugged into the desktop or the laptop). In addition, academics point to the lack of competitive products available. Microsoft Word has completely replaced previously existing word processor software competitors such as Lotus or Word Perfect software. This reduction of choices clearly confirms the homogenization of academic practices. Furthermore, as Iara contends, technological replacements are not necessarily enhancing,

> the power book was great, the ergonomics of the keyboard was very comfortable, you could actually put it in your lap. The screen was great. I don't like the interface in Windows. There is too much noise, too much movement, things jumping around. I want to go and check my email when I decide I don't need a beep to remind me.

Iara also points out that the technologies are not designed specifically for professors and students: "it is extremely distracting and you have no choice to design it as you like. There is very little thought put into what would be the best technology for a researcher or a student".

While the choice in using video, the chalk board, or the overhead projector remains, the insistence in using computer dependent technologies is dramatically diminishing the perceived choice of alternative technologies. Similarly, some undergraduate students perceive that if professors are not using computer based technologies, they are not giving students the complete educational experience. Palmira explains,

I think more and more it will be seen as if you don't use Web CT

> you're not a good professor and I think that's part of that frenzy and fashion that good professors are those who use WebCT, never mind if they use it well, as long as they are using it they're good. So, in a sense, you feel the pressure if you don't use it.

This equates the use of technologies with the quality of education provided.

Related to the lack of choice is the issue of pressure. Margarida contends that, there is a lot of pressure to use certain technologies, visible, for example, in requests to migrate Web page content to the Web CT server,

> I don't want to hear anything about the pressure. Like changing to Web CT. I don't want to change but there is pressure. Oh yeah, how they want to change my Web sites they say that all Web sites have to be under the federate of the university and they say you have to move everything to another Web site and the maximum is 100 megabytes and I already have more than that so what do you do? All my PPTs, all the articles, they take more space than that!

Professors are being pressured into using the WebCT server, which offers less electronic space. This indicates again a rationalization of academic work as the university provides free electronic space but in a specified limited amount. Margarida adds that the expectation that professors will promptly migrate from Web pages to the Web CT server, when this means that they will have to reduce the amount of files contained in the site because of the limited space allowed, is "not realistic, everyone knows that, everyone who knows something about production on the Web knows that it takes more than that so that you can ensure that the text is fine the links are fine. I told them what was done is in Flash and I would have to re-program part of it". She will reluctantly transfer the contents and request more space from the administration.

Many academics, while disconcerted with the monolithic scale of technological integration that neglects to consider departmental differences, do not feel under personal pressure. As Paula highlights, "I'm actually doing it more for my own sake. My feeling is

that once I've done the lectures on PPT the next time I teach the course I can reuse it all and I don't have to go and pull out the files again. So, the extra work that I'm doing will pay off in the future for myself". Realizing that this does function as a *de facto* pressure, she points out that, "but now I get my own research assistants to do all the scanning, I had a Royal Bank grant to do that, so in that sense there's some pressure. But once you start you're hooked, there''s no turning back".

Some professors assert that they are "perfectly capable of resisting the pressure, beyond having to be on email nothing is forcing me to use the technologies". José Luis' admission of "having to be on email" diminishes the capacity for resisting the pressure. The ready acceptance of this diminished capacity is indicative of technological practices becoming normalized. At both universities studied, most academics perceive the initiatives and policies as encouragements and incentives that contribute to an environment of pressure. Respondents highlight a perceived disconnection between the promulgation of technologies as leading to increased choices and the fact that the choices are actually reduced to institutionally adopted technologies.

Both, professors and students, have no choice but to use computer based technologies as previously available paper versions of documents and forms are increasingly, if not totally, being replaced. All grant applications are online, abstract submission and registration for conferences is done online, granting institutions have stopped the practice of sending hard copy versions of forms. This lack of choice leads to a downloading of tasks to the user, which entails a clericalerization of the academic. As Isaac observes,

> a good example is the marks, it use to be that you write down the marks, give them to the secretary, now you have to type them in

> and since they are on your computer why not just submit them yourself. One by one all these changes make sense, but taken all together. Why not fill in the R.A. forms for my students as well? So we spend a lot of time doing that. In essence there has been a clericalerization, if you like, turning professors into clerks.

Technological integration has resulted in a steady increase in the amount of tasks that academics have to perform according to my informants. In the words of Isaac,

> a few years ago a secretary would do it for me. It's a downloading of everything onto the user, not just at the university but in general. Even with the idea that things are available online but you have to print it, this downloads costs and time. Administratively, academics have less and less of a choice, which is posing more and more of a problem.

Increasingly conference registration and abstract electronic submission, "so you don't have to deal with postage and mailing it" however, there is now no choice such that the mail was substituted by the computer. Similarly, most research funding agencies applications are now online[10]. It is not that granting agencies are *allowing* electronic submissions but that they now *require* them electronically. The perception is that instead of increased number of choices and convenience there is an increasing downloading of tasks.

A distinction is made between the pedagogically related functions of the technologies, which academics are questioning, and the downloading of administrative tasks onto faculty and students, which is more problematic. As Isabel remarks,

> while this is more convenient, I think it is to some extent the thin edge of the wedge: we have to administer all our own research grants, hire our own research assistants, do your vacation pay online, all the expenses and so on online. That is starting to get into things that you know in addition to being a researcher, a teacher, being someone doing a service within the university and outside

[10] Such as the Social Sciences and Humanities Research Council (SSHRC) and the Fonds Québecois de la recherche sur la société et la culture (FQRSC).

> the university, etc, etc. and in addition to that being a public relations or payroll officer trying to figure out someone's pay cheque, and that, frankly, I do not want to do.

Isabel does not problematize policies that are directly connected to pedagogy, such as submitting grades on the Web CT server, but those initiatives that take away from scholarship,

> I do not have as much of a problem with that, but some of the other things that are related to that mind set of downloading administration a) it puts administrative staff out of work, that is something to think about, but also b) I think that each faculty member having to learn all of this on their own versus having one person in the department who knows it well does not strike me as necessarily cost or error wise efficient, and it is a huge amount of work and work of a different nature than I am interested in doing as it takes time away from students and research.

Indicating that there is a lower degree of agency in teaching and learning than in research, Jessy remarks that there is, "more control research-wise about how we chose to use technology, so the technologies are likely to be chosen because they're going to meet some need we have". There is seemingly no need to institutionally systematize the uses of technology through research because activities are to a certain extent, perceived to be independent of the institution. According to Jessy, "the institution provides the infrastructure, but you choose the tools that work best for you. So it is easier there to feel that you're making the choices that are appropriate".

The perceived clericalerization of the academic, evident in the downloading of tasks, is related to the ideological contestation surrounding shifting notions of temporality examined in Chapter Two. The time required to use and learn the technologies, the changing pace of presentation, as well as the time academics spend time doing clerical work, modifies the structure of academic work, where there is less time available for the actual activities involved in the production of knowledge. Inevitably this leads to a

saturation point, where using the technologies precludes the production of knowledge.

Academics are not challenging the integration of technologies, per se, but rather contesting their own lack of input in the decisions being made. They perceive that many of the decisions concerning the integration of technologies in university education are being made by the administrators rather that the educators. Not only is the contestation evident in the perceived lack of agency at the academic level, but importantly in what academics consider significant roles for technologies in the production of knowledge.

Role of Technologies in the Production of Knowledge

The issue of the perception by academics of the role of technologies in higher education is important in itself and because it relates to the issue just examined, that of the role of the educator and the learner in integrating technologies in education. When asked about the role of technologies in higher education, Raul remarks: "I would ask the question differently, I would ask: what's the role of educators in integrating technology in education? So in the way I reformulated your question I am answering it". His answer presumes that the role of technologies in education should be determined by the educators, and not solely by the institution. Academics perceive the role of technologies in the creation of knowledge to be one of facilitation of academic work through the exchange of information and the processing of data. Furthermore, academics express various concerns associated with the appropriateness of using technologies beyond this facilitation role.

José Luis points out that technology has had an important role in the exchange of information and for increasingly powerful data processing,

> whether it be scientific or whether it be data sets, those kind of uses clearly one can do things now which were unthinkable. I have been using computers since I was a graduate, which is close to 35 years ago, and the computer power we had at our disposal is comparable to what I have in my palm pilot.

Conceivably, in the future, universities might arrive at that kind of easy access to computers and therefore a way of employing the technology in ways that we have not yet understood. Regardless, for José Luis

> the bottom line is not the technology for its own sake, but the latest in a series of tools that can facilitate what I as a teacher want to do and what presumably the students come to university for, which is to learn. To learn not just a bunch of factoids about physics or history, but to begin to understand and putting concepts together, you know the whole taxonomy of learning: knowing, understanding, thinking.

He relates the role of technologies to the role of higher education itself. Referring to the use of the WebCT server he contends: "I would not want students to merely follow my classes on WebCT, partly because, as cliché as it is, universities are more than that. Part of the experience is to come to the class and hang out, it is as much about socializing, and students learn from each other also, not just from me".

Similarly, António remarks that the role of technologies is to facilitate the provision of course content, "for content delivery and lower level learning objectives they're useful. For higher levels of learning you still need to have the face-to-face, the instructor meeting with the students". In agreement with António, Raul warns that,

> technology by itself means nothing, you can use the technology in such an awful way that you do more evil than good for your students. It's better to have a professor who is a very good lecturer that a very bad professor using all kinds of technological stuff, the technological stuff is not an answer for anything.

While the institutional discourse presents technologies as a 'tool', Melissa

remarks that "access to information is a cliché, it is the first tool used for searching, as most students search Web sites with relevant materials. I still don't find that very useful". Melissa contends that the information available might suffice to a neophyte, yet it is not in depth enough for higher levels of expertise,

> when you are just starting out and don't know very much it's useful. The more and more you have a grasp of the field, what's out there it's either drivel or you say publish it, and then, that publishing is saying that some one has taken a look at its methodology, and so on. Otherwise students are left with figuring it out for themselves and they can't do that at all. And I can't be bothered because I don't have the time, that's the advantage of having editors, let them do that.

For Jessy, the use of technologies in higher education should be seen "like in life generally, they should be tools that facilitate the things that we want to do. They shouldn't be driving us to do things that we don't want to do, and the institution has to help us do that by explicitly valuing those kinds of decisions, I don't think McGill does that". She contends that when creating policies concerning the uses of technologies, one of the issues is that courses are traditionally approved, and changes to courses have been approved without focusing on the strategies being used in the classroom.

> The new technologies suddenly mean that the university has to be asking, to what extent do we want to be paying attention to instructional strategies? This is a whole new piece of the pie that in the past was just left to the professors, and the University [administration] does not know what it wants to do with that.

Contrary to the administration's discourse of beneficial uses of laptops in the classroom, Jessy claims that,

> laptops in the classroom are probably not that useful and meaningful because they are kind of like the Intelligent Classroom in that they have all the bells and whistles but, does it substantively change what is happening? Given the skepticism I have seen that people are concerned that maybe the technology in the classroom

is getting between them and their students.

Referring to the Intelligent Classroom, Jessy contends that,

> with the Intelligent Classroom, it is giving more technology in class, but given that there should be a balance between in-class and out-of-class time – most learning occurs outside the classroom – what we ought to be thinking about is how can we be supporting and giving practice and feedback to the students and probably technology that they want to use and can use without too much difficulty for themselves.

According to Jessy, the role of technologies should be to facilitate giving feedback to students about their learning and to provide them with more opportunities to practice with the information received in class. Using technologies to provide both feedback and practice would improve students' learning and contribute to the production of knowledge.

António cautions that, "it's very easy to get seduced by the technology. I'd be worried if there was no face-to-face contact. I don't like the idea of having just distance education. Technology can be very useful but I would be wary of anyone saying you could replace a professor with a CDROM". Similarly, Elias, an ICC instructor and a graduate student in the faculty of Education, emphasizes that "if a professor can be replaced by a video tape, he probably should not be teaching", implying that a class should be responsive to the student dynamic, and that the value of the teacher can not be underestimated or replaced by computer software.

Students, particularly at the graduate level, raise an important and serious concern that "the move to on-line" will be "constantly moving rather than an actual move". With perspicuity, João articulates the integration of new technologies in higher education, particularly in teaching and learning, in terms of a precipitation of "the manufacture of

learning by pre-approved text rather than human dialogue" and he expresses the preoccupation that "superficiality and speed will replace depth". Similarly, Zé Manel, a graduate student in the Faculty of Arts, questions whether technological integration ultimately diminishes the value of the human. "Are we driving ourselves into the realm of obsolete? If the technology itself becomes the education, we are destined to be drones. That is not why higher education exists". The issue of the replacement of the human with machines is undeniably a concern to my respondents in relation to university education where, presumably, the purpose is the development of the human mind.

An interesting and significantly disturbing concern is the perception of a positive correlation between an increase in using technologies and increased distraction. There is a dispersion of concentration and focus, to such an extent that the technologies actually become intrusive. This is the same distraction issue Iara pointed out in relation to the noise the computer makes every time an email message is received, which is seen as intruding rather than enhancing. The discourse of added benefits of the technological applications, such as the sound for each incoming email message, can, in fact, distract the focus of the work being done. In this regard, Romi asserts that,

> because of the way the technology is set up you also are juggling a lot of things in your head that you used to be able to separate, you say for this hour I am doing this, then you get a bell telling you that you just got an email and you go and check it and it is on a different subject and you go and reply and you're constantly changing the things you're working on, its much harder to separate the time and the focus.

Some students see the speed of the technologies as affecting their academic life, as Romi remarks, "this may sound funny but the tempos have picked up, like things are happening faster, so that it used to be in the past that when you sent out a question you'd

wait a week before you started to get some input into what you were asking, but now if you send it out by email you might start to get input in half an hour".

A number of graduate students are emphatically critical of the use of technologies in university education. João makes this claim clear, emphasizing that, "technology just helps the communication aspect of teaching and learning. It does not replace creativity, and it does not help one become more creative. It should not be seen (even theoretically) as the be-all and end-all. It is a resource, period". Similarly, Miguel, a graduate student in the Arts Faculty, points out, "I am glad that technology came so late to me in my education, as it made me more sensitive to its impact". Students are concerned that the extensive use of technologies can become normalized to such an extent that it may lead to superficiality. This preoccupation explains why undergraduate students are very accepting proponents of the new technologies – as undergraduate students they belong to a demographic that has always used computers.

Perceiving the pressures to use new technologies as deriving from the 'hype' and a certain avant-gardism, Palmira ponders on the potential elitism of technological integration,

> one way that I feel it's important is that in a way we're jumping on the bandwagon and it's a cool thing to do and while it may be helping us out it is leaving a lot of people behind. And not just people within the university but people from outside of here. There are students who have not really used a computer before and now all of a sudden their whole experience depends on it! So, whoever had the opportunity to use technology and had technology available to them before coming to university is ahead of the game, whether we like it or not.

Furthermore,

> maybe it's just at McGill, but I also find that higher education is seen as elitist, people with money or people who don't have

> serious problems in life, or that can just spend so much money that they can just fill their heads with knowledge. This [technology] just adds to that. I think that when you have people at that level of day-to-day survival, university is not in the books for them. And technology does not help that on the contrary it really can exacerbate that.

While the implementation of technologies is hailed as providing more access to education at the learner's convenience of time and place, my respondents' perceptions are that the use of technologies perpetuates the view that university education is elitist.

Both professor and students reiterate the importance of conventional interaction. Romi expresses this effectively,

> with face-to-face, because of sense of community of belonging, there is some sense of cohesion that you would not have if you were sitting in your 2 bedroom apartment in front of your computer screen and you just see these people. Probably because you'll miss out on a lot of other human interaction, the life interaction where every time you go down and get a coffee there is someone you know and you talk about life, or when somebody brings cookies at Christmas, so you loose that.

Similarly, José Luis states: "I would summarize what I've said by insisting that technology is always the tail of the dog and must not be allowed to control the process of teaching and learning which is the animal which we are all interested in, that's the bottom line". Concurring, Tommy asserts that, "integration means, to me, adding, complementing and supporting and not replacing. So when I hear, in the future students will not come to the campus, everything will be done by a computer, I don't believe in that; I believe there needs to be a human dimension". Moreover, Romi claims that, "you might lose some of your ability to communicate verbally to people if you are always using text and writing and you are not in an environment where someone asks you to think quickly on your feet". Clearly, respondents are concerned that increased use of

technologies may lead to a degree of loss of the human interaction involved in the production of knowledge.

Most of my respondents acknowledge that, ultimately, the challenge is to achieve a balance between using the new technologies and maintaining physical interaction. As Paula remarks,

> the space that people appropriate for themselves, what are the balances of use of email, how do we find a balance between technology and interaction? There should be formal as well as informal spaces. But the question is a philosophical one, the private space is gone, you are always getting email, you may not answer it but you are receiving it and people are getting to you.

The issue of the relation between using technologies and private space is not a new one (Lightman, 1994, Meyrowitz, 1985) but it resurfaced often in this study[11].

When asked about what they felt was important in the relationship between the integration of technology and higher education, professors and students alike reiterated, with a sense of frustration indicative of a loss of control over important aspects of their work, the importance of the human dimension of higher education and the lack of institutional support for their use of technologies in academic work. They pointed out that the major changes are that: they sit down more, they are more bureaucratic, more compact, the increased lack of private spaces, and that it is our academic prerogative to be sensitized, and to sensitize others, to the impact of new technologies.

As Isaac highlights, "the most important thing about the changes of academic life brought about by new communications technology is that I spend a lot more time sitting in a particular posture in front of a screen". These comments emphasize the potential of being chained to a desk, rather than an opening up a whole universe. In the cases that it

[11] See also Chapter Two, p. 62

does open up the universe there is mere substitution, not enhancement. Recognizing this, Isaac remarks that,

> before you wandered around, a whole set of things that I use to do running around - copying, printing, etc. - I now just do sitting here. Now you become more compact, now every newspaper, person you meet, shopping, it is all online, so much so that we forget what it was like before. On the one hand, it means that my life has become more bureaucratic - here I am being a secretary. On the other hand my office is a much more exciting place because so many things are available to me.

Although to encourage the use of technology is his "business", Bruno concedes that there is exaggerated hype about the capacious enhancements enabled by technologies, and that he admittedly has no evidence that technologies enhance learning, or the learning experience. "I think there is too much hype about it". Even though the ICC unit itself perpetuates the hype, the director goes on to say that, "good teaching is about ideas and the way they are conveyed and my feeling was always that who the professor is and his ideas was more important than the material being covered. And I think this is getting lost a little bit with technology". Despite a residual perception of enabling technologies, which can be used to improve the quality of teaching, his point is that it takes experience and reflection to become a good teacher with the minimum of technologies. In his words,

> I think, as part of the whole matter of teaching, that we still need the emphasis to be on what makes a good teacher and how do we convey an enthusiasm for the subject. A lot of technology has to do with the nuts and bolts of transmitting the facts and the data and talking about them, but what it doesn't get at is the professor who just conveys to students their own enthusiasm for the subject - you know you take courses where you say 'I want to be an Anthropologist'.

I purposely end with a quote from a member of the administration to underline

that despite the prevalence of a technocratic institutional discourse mandating the uses of technologies, there are also tensions within it. Namely, there is an implicit agreement with academics' perception that the most appropriate role of technologies in the production of knowledge is facilitative rather than creative.

The academic discourse raises questions about the relation between market imperatives and the creation of knowledge, and emphasizes that the erasure of the academics' role in decision making is counter-intuitive to academic culture. Additionally, the articulation of the role of technologies as facilitative suggests that the production of knowledge is a creative rather than a transmission process. As examined in Chapter Five, knowledge is about the creation of ideas rather than about how they are reproduced.

Of Power and Knowledge

Two overlapping and different discourses were identified by the respondents as framing the integration of technologies in their universities. The institutional discourse of technological integration is being interrogated by the academic discourse. For each enhancement facet promulgated in the institutional discourse, there is a parallel academic discourse of contestation. Along with learner-centered, open learning, and enhanced choices, there is a perceived potentially undesirable process of institutionalization of scholarship characterized by the corporatization of education, the centralization of decision-making and service provision, and the homogenization of academic practices. This process is intensified by a perceived lack of academic agency concerning the adoption and implementation of technologies in the practices of instruction and research. The institutionalization of scholarship and corresponding lack of agency forms the basis

for the academic contestation in the increased technological and pedagogical uniformity that is being imposed, in the increased self-subsidization of technologies for academic work, and in the increased clericalerization of professors.

The articulation of these two discourses, framing the implementation of technologies in the creation of knowledge can be understood, I posit, in terms of Foucault's analysis of power and knowledge relations, particularly explored through the concepts of normalization and freedom. Foucault's postmodern idea of power, where power is dispersed and continually evolving, adds a fluid dynamic to the concept that allows us to understand the existence of the two interrelated discourses on technological integration in higher education, where the principal mission is the production of knowledge. While the implementation of technologies and mandated policies and initiatives erase academic agency to a great extent, this erasure is always only partial. Academic agency remains, significantly, in the various manifestations of contestation in practice and in discourse. The power relations are dualistic, but in a specific way.

In emphasizing the linkage, indeed, the inseparability of power and knowledge, an important focus of analysis is in describing forms of power/knowledge that are bound up with classificatory activities that Foucault refers to as "dividing practices". These practices identify and then separate the deviant, the diseased, the dissenter. A fundamental transformation took place in penal practices during the late 18th and early 19th centuries, namely the disappearance of the public spectacle of physical punishment and the development of a different form of penalty (Foucault, 1979). For Foucault, the transformation represented a shift from the body to the soul, or psyche, as the primary target of punishment. The immediate object of punishment changed from infliction of

torture and pain on the body to a deprivation of freedom of the individual. Although the body was no longer the direct object of punitive practices, it remained subject to the penal process, confined in prison and subject to control and regulation.

In the relation between the production of knowledge and technologies the institutionalization of scholarship can be seen as a mild form of regulation and control. The policies and initiatives leading to the corporatization, centralization and homogenization of education are factors that can potentially interfere with academic culture's valuation of freedom. The academic contestation of their perceived lack of agency is precisely linked to the notion that it curtails freedom. Academics are free to choose whatever they want as long as they select institutionally supported enterprises. This diffuses the notion of agency.

For Foucault, freedom is not an absence from coercion rather it is always implicated in power relations that are creative as well as restrictive. Broadly speaking, for Foucault, the classical (Kantian) idea of freedom must be rethought. It can no longer be seen in solely negative terms, as freedom from constraint, but must involve more positive notions of individual autonomy, particularly the freedom of the individual to construct new modes of subjectivity. This understanding of freedom is grounded in concrete and contingent strategies of the self. Freedom is not the comforting illusion of liberation from power but rather it is implicated in power relations through concrete practices and strategies of the self. It is only through a rethinking of freedom in this way that it can be wrested from the metaphysical world and brought to the level of the individual. This practice of freedom is also a creative practice – a continuous process of self-formation of the subject. It is in this sense that freedom may be seen as positive. It is this practice of

self-aestheticization that allows us, according to Foucault, to reflect critically on the limits of our time. It does not seek a metaphysical place beyond all limits, but rather works within the limits and constraints of the present. More importantly, it is also a work conducted upon the limits of ourselves and our own identities. Power operates through a process of subjectification and the radical reconstitution of the self is a necessary act of resistance.

Practices with new technologies are promoted in desirable, enhancing and capacious terms. The institutional discourse presents the Laptop program, the Exemplary Course program, and the purchase of the licence to use the WebCT server as initiatives promulgating the adoption of the technologies in a journey to becoming a "better" academic. The anthropomorphization of technologies, where individuals use 'smart' boards and deliver lectures in 'intelligent' classrooms, implies that using these technologies will enhance performance. The academic discourse cautions that the implications of such anthropomorphization may be reducing intelligence to technologically dependent capacities. From a Foucauldian perspective, this is a productive encounter between two discourses. The discourses are not contradictory but rather are in tension with each other.

Unlike classical schema in which power and freedom were diagrammatically opposed, Foucauldian thinking asserts the dependency of the former on the latter. Moreover, freedom is presupposed by power. Rather than the abstract notion of freedom as a rational choice beyond constraints and limitations, freedom for Foucault exists in mutual and reciprocal relations with power. According to Foucault, where there is no freedom, that is, where the field of action is absolutely restricted and determined, there

can be no power. Slavery, for instance, is not a power relationship (1982: 221). Following Foucault, power may be understood as a series of "actions upon the action of others" in which multiple discourses, strategies, and technologies clash with one another – specific relations of power always provoking specific and localized relations of resistance. Resistance is something that exceeds power and is at the same time integral to its dynamic. Power is based on a certain freedom of action, a certain choice of possibilities. In this sense, "power is exercised only over free subjects, and only insofar as they are free" (1982: 208). The academic discourse of contestation can be framed as a kind of resistance to, or more precisely, a contestation of the institutional discourse.

If freedom is to be an enduring feature of any political society it must be seen as a practice, an ongoing strategy and mode of action that continuously challenges and questions relations of power. The academic discourse challenges institutional apparatuses that define knowledge in terms of its association with technological innovation. As Isaac points out,

> five years ago it looked like everyone was moving towards distance education, now universities are competing for prestige and people realize that the best universities are the ones that have full time professors with a good research career who are well paid, rather than a technician, or tutor, who has a course on a server somewhere.

This ascending analytics of power is contrasted with other approaches that see it as produced by particular institutions and laws, modes of expression or systems of domination. Instead, power is seen to constitute the subject; it is exercised upon, through and by the subject and its domain. Foucault sees power as originating from below in each instance of the social machinery, in individuals, groups, and institutions. The question of the rise of scientific knowledge through the discipline of the body develops a form of

power that "actualizes" disciplinary practices, norms and knowledge. "Discipline may be identified neither with an institution nor with an apparatus; it is a type of power. A modality for its exercise, comprising a whole set of instruments, techniques, procedures, levels of application, targets; it is a 'physics' or a 'anatomy' of power" (1979:115).

In addition to freedom, another aspect of the power and knowledge relation that informs my analysis is the concept of normalization. The achievements of liberalism, such as individual rights and freedoms, go hand in hand with normalization and discipline. By normalization Foucault means a system of finely graded and measurable intervals in which individuals can be distributed around a norm. In the ensuing process of normalization one finds the emergence of the empirically (replacing the ethically) derived standard of the "public interest". Normality is important because the power of the norm functions within a system of formal equality, since within the homogeneity that is the rule, the norm introduces the shades of individual differences (1974:184).

The educational technology policies and initiatives are normalizing practices. The elements of corporatization, centralization, and homogenization constitutive of the institutionalization of scholarship are normalizing practices. The degree of convergence and ubiquity of new technologies acts as a normalizing agent, it becomes normal to use new technologies because they are everywhere and everyone is using them. Academics find it entirely normal to use email correspondence rather than face-to-face interaction, or to submit grades on the WebCT server, and this infuses a predisposition for the acceptance of using technologies in other areas of their work. This degree of normalization acts as a technology of the self. Similarly, students who were born in the 1980s find it normal to have computer based instruction because they have always used

computers and are less likely to be critical and cautious of the possible implications of using technologies.

Three aspects of normalization must be highlighted. One, the policies and institutional initiatives act as disciplinary techniques. Two, the institutional discourse is based on the technological normalization outside academia. The institutional discourse is based on normality in every sphere of society where technology is not only required but desirable, and this is transposed to higher education. The process of normalization may be seen in the increasing centrality of economic efficiency considerations evident in the institutional discourse's market approach to higher education. An inherent contradiction contained in the process of normalization is evident in the fractionalized discourses. Just as specialists emerge to discipline and correct new classes of deviants, another branch of the same techno-discipline identifies new forms of contestation. At the same time that individuals slot themselves into new categories, there are those individuals, namely academics, that although not advocating that technologies are "out", they point to important limitations and implications of their uses when it comes to the creation of knowledge. This new category is both 'wired' and contesting. This category can be considered deviant from a norm that sees the uses of technologies as inevitable and always desirable. Third, one must recognize that normalization occurs in both discourses. Specifically, one must be aware of the power and knowledge effects of the academic discourse in relation to academic culture as a normalizing process.

Foucault's main point in *Discipline and Punish* (1979) is that the transformation that occurred in the penal system during the 19th century gave rise to the emergence of a new field of objects, new forms of power and new forms of

knowledge. The potential transformation of education through technological integration leads to new forms of power and new forms of knowledge. The institutional discourse bounds the creation of knowledge with notions of technological progress and locates knowledge within a model of transmission of information and electronic reproduction. The academic discourse, however, refutes such a connection between knowledge and technologies defining knowledge in creative rather than transmissionist terms that, as will be evident in the following chapter, better resonate with the culture of academics.

A limitation of Foucault's analysis of dynamic relations of power is that there are practical limits to the fluidity. Corporatization, centralization, homogenization and clericalerization are seen as coercive by depriving academics of their freedom in institutional decisions concerning technologies. The existence of policies for use means that academics have to answer emails, despite the fact that they can have their own email policies; they have to submit grades on WebCT; they have to fill out forms online. This modifies the conditions of the production of knowledge, changing the structure of academic work, and ultimately the nature of scholarship and academic culture. At the same time, according to respondents' perceptions, technology cannot be used to create knowledge, but to reproduce it, delineating the parameters of the power that technology yields. The relation between technologies and the production of knowledge necessarily increases the power of academic culture. While the process of producing knowledge necessitates academic culture, academic culture does not necessarily require technologies to create knowledge.

Academics bring their cultural priorities to bear on the uses of technologies.

Technologies are actually used to re-contextualize established cultural practices. The academic discourse emphasizes the maintenance of oral practices, seen in the importance of face-to-face interaction in lectures and conferences, as central to the creation of knowledge. These cultural practices are considered more important than the technologies used. Technological integration alters and sustains important aspects of instruction and research. This juncture suggests that the use of technologies and academic culture can be seen as an interactive relation. There is not a bifurcation between technology and the creation of knowledge, and, the notion of knowledge is not a pre-technological condition. Yet, working inside the commodity market, education uses forces that are informed by reproduction technologies, but it uses them in a way that affirms academic culture priorities that sometimes work against market forces. Although education is shaped by and articulated through technologies, its academic priorities are not primarily by-products of such technologies.

Grounding education, at least the liberal arts model of university education, as a cultural discourse dismantles the causal link made by the institutional discourse between knowledge and the technological means for its production. Since the printing press university education has been structured around the idea of print culture. Historically and culturally grounded interpretations of technologies illustrate the significance of culture in the implementation of technologies. Every mode of education, from conventional face-to-face to blended, is rooted in the social formations and technologies of its age.

Conclusion

Cultural benefits can clearly emerge from technological integration in

universities. At the same time, the educational technology policies and initiatives enacted are not perceived to be taking into account a variety of aspects of academic culture. The technological commitment of the institutional discourse outstrips the concern for academic culture. The administrators put into place policies that privilege a culture that stresses a will to technology, remaining committed to a technocentric model of operations, that is, to use the most advanced communications and information technology systems available. In this vein, despite enormous efforts to integrate new technologies in universities, academics have articulated a counter discourse that is based on cultural elements. The relations of power represented in the two discourses that, for my respondents, frames the integration of technology in the production of knowledge, while appearing to verge on administrative dominance never totally succumb to it. The analysis indicates that the two discourses are both in tension and have internal tensions. A Foucauldian analysis of power in the relation between technology and culture allows us to posit that, in creative industries, as with higher education and the creation of knowledge, the relationship will always be more interactive than imposing. This requires an understanding of culture, specifically academic culture as examined in the following chapter, that more accurately captures the power relations of the two discourses.

Chapter 5
Academic Culture: Redefining the Boundaries

> *University should be about the pursuit of knowledge first, and that is primarily a logical, exploratory, and philosophical goal, but not a superficial one* (João).
>
> *I don't believe in transferring knowledge. It is impossible to try to transfer the knowledge that I have, my knowledge is my knowledge. It is how I built my knowledge* (Raul).

Introduction

This study was driven by the questions of how academics' views and practices about the role of new communication technologies are related to their views about the creation of knowledge and how these in turn determine and differentiate academic cultures. This chapter discusses academic culture and the ways in which it has been modified by the implementation of new technologies. It is my contention this technological integration cannot be separated from the cultural assumptions of academics.

I anticipated that academic culture would be characterized by a range of approaches to the integration of technology that could be represented in a continuum between two extreme tendencies, one, implying a neo-liberal approach, and the other, tending towards a critical approach to technological integration. Contrary to these expectations, however, despite differences in the technologies being adopted by professors and the students, such that some use Web CT and others do not, or some use PowerPoint and others do not, these differences are not related to the beliefs and practices concerning academic culture. Contestation towards the integration of technologies in university education comes not only from those who use the least amount of technologies, but from those who use them the most and are their strongest promoters.

Regardless of how much and which specific technologies academics use, my respondents have highly homogeneous views about academic culture.

The following paragraphs provide an examination of the cultural assumptions of the academics that I interviewed and how those relate to how they perceive the integration of technologies. The analysis indicates that a critical attitude towards the integration of new technologies is a unifying characteristic of academic culture. Academic culture determines, partly, the technological practices and discourses of contestation placing significant limitations on the uses of computer-based technologies in the creation of knowledge. As examined in previous chapters, academics use technologies in a facilitative and transmission more often than creative roles and they articulate a discourse of contestation that underlines the ways in which they perceive technological implementation as initiating an undesirable process of institutionalization of scholarship. The technological practices and associated discourses of contestation have a dynamic relationship with academic culture, generating some rich internal contradictions.

Academic Culture

In the relation between new technologies and academic culture I want to avoid a superficial and conceptually flawed polarization between the world of the sciences and the humanities, and rather than having disciplines as units of analysis, concentrate on themes across disciplines and epistemological fields. This makes my study unique relative to those discussed in Chapter One. I concentrate on four departments that form a range of disciplines from 'hard' to 'soft' or 'pure' to 'applied', and on all forms of

scholarship: teaching and learning, publishing and research. My research indicates that in the relation with new technologies, the academic cultures are quite homogeneous in their thinking and practices across the range of epistemological thought.

As outlined in Chapter One, and analyzed in detail in this section, academic culture, in its relationship with technologies, relates primarily to the creation of knowledge, transcending to a great extent the discipline and the institution. According to my respondents, the cultural assumptions that form the basis of the technological practices and discourses of contestation are: the philosophy of teaching and conception of learning; the role of higher education; the roles of academics; the conception of knowledge; and academic communities. The following paragraphs examine these assumptions and the extent to which they influence the reported uses of new technologies in the creation of knowledge.

Philosophy of Teaching and Conception of Learning

Views of teaching were dependent on differences between graduate and undergraduate level of education; the subject matter; philosophy and practice; teaching and facilitating learning; and the idea of an evolving of the philosophy of teaching and learning. Academics' views of teaching and learning are closely related to their views on the role of higher education, to their role as academics, and to their views of knowledge.

Most respondents believe that the focus of teaching and learning should be the students' level of interest and motivation. A standard view of teaching and learning is that professors see themselves as people who try to motivate students to think, using teaching strategies which have pedagogical value and which lead to learning. For Paula,

this means trying "as much as possible not to lecture, to be much more interactive in terms of dialogue. So, I tend to think that what I am doing is giving them the skills that will work for a range of disciplines not just to become a specialty".

Additionally, many respondents articulated the need to design teaching in a way that leads students to actively process the content of the discipline. For Raul, his conception of teaching,

> is to provide the opportunity for them to process things that normally lead to learning, it may or not. The situations are uncontrollable, I'm not perfect, I don't have all the resources, I have to follow the University's rulings, I have to give courses in a certain classroom, they give me eighty students!

The role of the teacher, having this conception of teaching, is to create the opportunity for students to actively process the content of the courses. As Raul points out,

> I don't believe in transferring knowledge. It is impossible to try to transfer the knowledge that I have, my knowledge is my knowledge, it is how I built my knowledge. So, what you can do, what you can be is not being a teacher but being a person who shows the way to get the knowledge that I have to make sense of the theories or the knowledge of the discipline or the course: this is the way I followed to get this knowledge.

These comments underline the creative, or constructivist, view of knowledge that will be examined in a later section.

For most professors, teaching means facilitating student learning and the role of the teacher is to be a guide in the process of learning. As Jacinta, the Senior Educational Technologist[1] observes, there are various ways to guide, "from being in front and saying 'do not stray because it's very dense forest out there', to saying from home base 'go and call me when you have questions or problems'. According to Jacinta, the challenge for a professor is

[1] See discussion in Chapter Four, p. 170

> to know how that role would work and the best way to structure the activities for the students. Ideally, what you want to do is help the student to develop an understanding that necessarily at the undergrad level, be simplified, but you don't want it to be simplistic. Such that you lead them to false conclusions and false assumptions, or is it simple enough that you say OK this is working, at this level I can work with this understanding and it won't lead me astray.

This places the focus of teaching on student learning, rather than on the teacher, beginning with the question of, not how to teach but, how students learn. In this view of teaching and learning, decisions about whether to use technologies in teaching and learning focus on the extent to which they enhance the learning students are expected to accomplish.

Professors Jessy and Isabel articulate their conceptions of teaching in terms of facilitating student learning. For Jessy, teaching is about student guidance, "to find ways to support learning; that means thinking about helping students set clear goals, finding ways to provide practice and feedback for these and trying to be responsive and flexible, because as the learning goes along the nature of the expectations and desire will change, but trying to also stay with the idea that there are time constraints". For Isabel, it is facilitating student learning.

> We're there to create spaces, opportunities, facilitate self-driven learning on the part of the students. Teaching is to create an interactive environment where students can come together, to participate in the learning process ourselves because teaching is not at all a top down model. It is sort of, creating a space where things can happen, get them to move past being knowledge consumers to being knowledge producers, so all they are thinking of themselves as people who can read and then synthesize or analyze, getting them to think about being knowledge creators, as trying to work with that to be able to produce the kind of knowledge they want to be able to produce.

Professors' views of teaching are infused with an evolving sense as they gain

experience and reflect about their own teaching. As António points out, his conception of teaching is

> sort of evolving. I'd say now that my philosophy of teaching is to always try to think about what the learning outcomes that I would want for the course are, what do I want the students to go away with and I think that even more now to really try and engage with students to achieve that. And that's quite different from when I first arrived at McGill, which was 'how do I teach?' But again it's always a challenge and it's always changing.

Melissa also has found that her view of teaching has evolved during her thirty-year career. She remarks that,

> I find that, the longer I teach I tend to teach less in two senses. One, I withdraw more and let them do more of the talking. I find that sometimes what they are talking about is not relevant but it still seems important to them, so I let them. Two, I also try to cover less, because I find that the more you try to cover it becomes more traditional teaching and it becomes like memorizing it. But if you want to apply it then you have to spend a lot of time thinking about the theory, so I look a lot less at details and look at broad theories, that's how I have evolved.

Traditional teaching, according to Melissa, focuses on the teacher covering the subject matter in a lecture style format, where there is little class interaction and active participation on the part of the students. Her current views reflect a change away from this and towards the student-centred university teaching, which underlines the active process of knowledge creation referred to by Raul above.

Professors' views of teaching are contextualized within the level of education. Making the point, Isaac describes how his philosophy of teaching has developed based on the level of program of the student "when I first started, and for nine years, I taught almost exclusively undergrads in big classes. Now, when I came to McGill, I am teaching exclusively graduate students and small classes, so I had to think about it". His teaching

philosophy is that, "we should all work hard in a group to understand complex things. I do believe that there are core ideas that I might know a little better because I have been doing this longer or I have researched it that I can transmit, otherwise why not just sit around in cafés?" At the undergraduate level, "I try to get them to look at something that they think they know something about and then they realize there is something else that they never thought about, I am always trying to surprise them". At the graduate level, "you have to create an environment where not only people have a good time in the classroom and learn, but are engaged in all kinds of other things, forming reading groups, preparing papers for conferences – having a sense of the world of scholarship". Graduate studies is a site for the transmission of the norms of academic practice and culture.

Views of teaching depend also on the subject matter. Teaching in the Faculty of Education, Melissa points out that,

> it is really important that students find it relevant, so I spend a lot of time trying to link theory and practice. At the undergrad level, I do lectures but I have a lot of group discussions and projects where they have to apply the theory in practice. At the grad level we spend time in class discussing how theories can be applied in practice, talking about it and relating it to their experiences.

Just as professors see teaching as guiding student learning, students see learning as a process of conceptual growth. Bruno's view of learning is about

> conceptual growth. You start with a conceptual vision which may encompass forms of knowledge, beliefs, goals and learning is when you end up questioning yourself and changing that conception, growing most often and adding to what you have.

Learning is the process by which that is achieved. Similarly, for Romi, learning is about "taking in new information and concepts and relating them to pre-existing concepts in your mind so that you end up with an idea of the implications surrounding that new

concept. I learn best through reading but also through experience and discussion, throwing around ideas". For Palmira, learning is about understanding how to apply knowledge to daily life, as she claims learning is,

> to apply what I learned into my day to day life. I find that you're learning when you're not only taking in information but you're able to analyze and question what you're being exposed to. Even though someone tells you that the multiple of 20 is 2 you really only learn that when you yourself understands why that's possible and if you don't understand you know the right questions to ask to find out if it's true.

Having the view of learning as conceptual growth, the role of the professor is then to guide and facilitate the process of learning and to realize the independence of the person doing the learning. As Bruno highlights: "you can't overly be a guide or else you are taking away the learning from them".

Like professors, students' views of learning are not static, but evolve with experience. According to Palmira,

> my learning style has changed since I've started university. When I first started I could sit in class, listen to a teacher and everything was comprehended when it was time to go home. Now, it has a lot more to do with discussions. Specially, there could be two or three people sitting in a lecture and all three heard different things and we have to sit down and discuss 'why it is that what you heard is not what I heard', so what's the right thing? Is there the right thing?

Academics' views of teaching as facilitating student learning and learning as conceptual growth influence the uses of technologies. They can preclude some uses and focus the use of technologies on their exchange and transmission features. This is interesting because the greatest impetus for technological integration in higher education is that it allows for 'learner-centred' models of teaching and learning. Relating her conception of learning to using technologies, Iara asserts the importance of being critical

of new technologies,

> my conception of learning is thinking outside the technology, which is something very much lacking outside academia. Thinking outside technology and thinking outside the discipline, thinking through different concepts outside the ideological boundaries of the disciplines, learn to think through.

New technologies in teaching and learning, including the use of the Web CT servers, is Raul's area of research and it is telling that while he has found that learning might or might *not* occur when using an online environment in a blended format, he stresses that it is important to realize that it takes more than putting up the course outline or the reading material or make the discussion space available on a Web site. Online, as with traditional teaching, activities have to be purposefully structured with clear objectives explicitly delineated.

Role of Higher Education

According to my respondents, higher education serves multiple roles, including a philosophical or intellectual role, a practical or vocational role, a socialisation role, a creative role, and a 'greater good' or conscience of society role. Although individual institutions vary in which roles they take on and emphasize, both McGill University and Université de Montréal have assumed all these roles.

The philosophical or intellectual role is described as somewhat utopian. It is that of contributing to each individual's personal intellectual development as a thinking human being. This is the notion of the liberal arts model, as Jacinta points out, which suggests that

> it doesn't matter what you study, the point is to study Twelfth Century Philosophy or Physics. And it doesn't matter if you apply

> the content of what you learn in life, but that you learn how to think. This is the liberal arts education model where typically eighteen to twenty three year olds go through the process of becoming adult thinkers.

Limited to the graduate context, Isabel agrees with Jacinta that the role of higher education is not job training in a direct sense. However, that does not mean that it is not useful, and it does not mean that

> everything you learn and do at university does not make you a much more competent individual in whatever work you do and it should have no connection to the work you're doing. I don't see it as job training, I see it as, learning for its own sake has value in terms of making you a better thinker, a better citizen, making you more equipped to deal with your job.

The implication is that there does not need to be, in order for it to be useful, a direct connection between a future job and what one learns in graduate school "if you leave a critical thinker with good writing skills, with research skills, you're a good speaker, there is a lot of jobs people can do". For Isabel, the role of graduate school is "furthering the advancement of knowledge".

Another important role of higher education has to do with the university being the conscience of a society, and students play this role as well. Margarida nicely summarizes this role, "there was a discussion about the Iraqi war. Well, what's the role of the universities? It is to bring students and the world into a better understanding".

Isaac agrees with Isabel and Margarida that one of the important implicit roles of higher education is "to make people more cosmopolitan, more aware of the different sides of the issues they deal with and basically to expand their horizons, more so than to give a specific set of skills".

For José Luis the most important role of higher education is to identify the

potential critical thinkers and future leaders,

> to identify the most capable young people that we have and to allow them to develop their powers in the direction which is most appropriate to those powers. I think that applies certainly at the graduate level, the future prize winners, future leaders of industry or the nation, that is critical. But it also applies at the undergraduate level. One of the difficulties, one of the problems with undergraduate education is that, that's not always apparent.

For students, as for professors, higher education should lead to higher levels of learning. Iara describes this effectively pointing out that the most important role is for higher education is "connecting the student's prior knowledge. Someone who completes higher education should be able to consider themselves and intellectual and that means that he or she should be able to understand the language and make connections, or ask questions and contribute something to that knowledge". Admitting to her idealism, she contends that, "I am very idealistic, but ideally someone in Physics should be able to understand someone in Communications and vice-versa".

The role of higher education, as professors made clear, will differ according to different academic systems. Differences between what academia means where different systems emphasize different aspects of roles of academia: practice or theory, research or teaching. As Raul remarks concerning his Brazilian background,

> I come from the academy, which is very theoretical because people don't get research money and because there are no funds, the pressure for publishing is limited. So if you request for example funding for research the funding agency gives you money, it's like an increase in salary.

Distinguishing between that system and the North American system, he adds that the emphasis in the latter is on research rather than on teaching. Raul asserts that, the requirement to do research as part of career advancement has had the unintended

consequence of professors assuming an increasing managerial role. "You become a manager not a researcher. Because to manage research and to do all other professional requirements, it is so much work, that you start to create small research companies". At the same time, the research requirement also has the consequence of less emphasis being placed in other areas of academic work, especially supervision of students,

> sometimes you don't have time, it's so weird, for example, with my supervisor we had every week a meeting with all supervisees who all worked on the same stuff, our meetings were to discuss theory and how to learn it and apply it. Here I can't do that, what we do is administrative meetings, so I ask 'what have you done this week? I went through this, I coded this', we talk a little bit about meaningful stuff.

With understandable frustration he points out the contradictions of a system that emphasizes the research aspect in terms of career promotions, at the expense of teaching. Underlining the paradoxical disconnection of a system that emphasizes a theoretical approach, Raul claims that such a system, while highly elitist, does provide academics with the time required to produce knowledge, "an elite, who stays above the world, thinking about philosophies and so on, they don't have money to do research, they don't have that model, but at the same time they have time to think. Here we don't have time to think but we have the money to do research".

The irony is not lost with other professors whose background is not the North American system. António, originally from a British education system, contends that it

> was not really meant to equip people for life but more in terms of learning the techniques of criticism in whatever subject you were in. That was sort of a very elitist system only aiming at a narrow section of the population. I think, now we open up university to a broader population which means that we should be teaching something more useful as well.

He is a professor in Engineering, a vocational faculty that is meant primarily to "train

students to do something useful out in the world" but he recognizes that it is equally important, yet not emphasized enough, "to equip them to be citizens". The challenge, for some in the vocational faculties vacillates between trying to do one or the other and achieve a balance.

Despite the, at times, overwhelming amount of work and accompanying frustration, Raul prefers the North American emphasis on applied research, relating his preference to the role of higher education, "I think that the role of higher research is to make university useful to society, to make the return on the money that they put on us". While pure research and theory are paramount in understanding society and the advancement of knowledge, professors underline the importance of the role of connecting university research with real life applications.

Similarly to the professors, students underline the multiplicity of roles that higher education fulfils. Cindy explicates that the role of higher education is to expand the mind. She names this role the "social reform kind of idea".

> You look at the greater good, if there aren't people who are kind of like, a building up, if everyone was kind of resigned and say 'well we know enough', then, there would not be the questions of general human progress. Ideally, people who have some kind of higher education should be inspiring, if that is the right word. Helping people learn so that things will influence the next generation, it learns a bit more or a bit differently, so that everything moves along stepwise, a bit more at a time, updated, more comprehensive, expanded as time goes by.

Agreeing with Cindy that the university's primary role is to expand the mind of students, João relates it to the pursuit of knowledge "as far as the Arts go, it is not to prepare students to excel in their chosen fields: a college can do that. University should be about the pursuit of knowledge first, and that is primarily a logical, exploratory, and

philosophical goal, but not a superficial one".

According to Zé Manel, there are two major roles of higher education: "one: teach us HOW to think, not what to think. Two: Give students opportunity to prepare themselves for their personal chosen paths"[2]. Similarly agreeing that there are two primary roles of higher education, Miguel states that, "one of them is to provide the content based instruction or to provide access to a form of knowledge so that you can develop your own conceptions and leave the institution and really feel like you've got a better understanding of things". The second, but no less important according to Bruno, is a socialization role,

> is a more hidden curriculum aspect of socializing people into a certain culture, which is the academic culture. At the level of a doctoral student it's really being socialized into the community of researchers. At the undergraduate level is more being socialized into a community of people who understand things a little better, ask themselves more questions.

Related to the socialization role, Isaac points out the sociological impact of higher education, asserting that it leads to stratification,

> at one level, it creates social stratification by giving certain kinds of people the luxury of spending time on improving their ideas and their taste and that creates social inequity. Although one can try to give an equal chance but, of course, McGill does not cost anymore than Carleton and yet it turns out people who become richer and more upper class because it presumes higher marks, and higher marks tend to come from those who have the social privilege to learn and the encouragement to learn.

Some students, both at the graduate and undergraduate level, have a more practical view of the role of higher education. For Cindy, higher education's ultimate goal is "to provide a measure (a diploma) of the extent to which one has learned in the field". Similarly, for Palmira, the principal role of higher education is simply

[2] Capitals are used in the original email response from the student to the author.

> just to prepare you to deal with pressures, deadlines and stress. Especially because, there are a lot of the things that we're supposedly being prepared for, but the things that we are learning do not apply to them, the content does not apply. If you were to put an 18 year old in an oil refinery, for example, he or she by the time they were 25 years old would have learned more, or they'll be just as efficient at that job as me who went to university. So, I don't think it's that. I think that part of it is to learn how to deal with other people, how to deal with somebody who is above you.

She recognizes another important role, the intellectual role "to somehow be more creative and innovative. To use the same example, of if you start at the field at 25 you'll know the job but that's the only thing you know, so you can't move from that point. Where, what I'm learning here I can apply to any job".

Related to the issue of practicalities is the important vocational role, as Jacinta observes the role of the University is also to be a professional school,

> we train nurses, engineers, doctors, and we want them to have specific content knowledge and skills. And this is an aspect that has taken on different forms throughout western society. In some places if you want to be a teacher you go to teachers' college, or you want to be an engineer you go to engineering school, not university, but that is the vocational role.

In summary, both professors and students agree that higher education fulfills multiple roles. The most important in the creation of knowledge are the intellectual, vocational, and public or common good roles. These roles are paramount in the maintenance and reproduction of academic culture.

Implicated in these roles, within the pursuit of knowledge, is the necessity of human capacities in developing critical thinkers and citizens. The roles identified by respondents do not inherently or necessarily prompt the use of technologies. Some professors conveyed the perception that using technologies may, in some cases, hinder the pursuit of their roles. On one hand, professors and students use technologies in an

ancillary rather than essential manner in fulfilling the roles of higher education. On the other hand, the use of technologies generates new roles for academics, which are not directly related to academic work, and which can reduce the time spent on the roles that pertain to the creation of knowledge.

Role of Academics

The roles of higher education are performed and fulfilled by academics who also fulfill a myriad of roles necessary for the creation of knowledge: they are middle managers, bureaucrats, accountants, teachers, supervisors, creators of knowledge, and they also have a public role as intellectuals. These can be grouped into three main roles: teaching (and learning), research, and administrative. To achieve a balance within the multiplicity and simultaneity of roles is a continual struggle, as they place considerable restrains on academics, especially when teaching and research are equally valued.

Isabel points out that there are two related, yet independent, aspects of teaching. One, teaching in the classroom, and the other, being a supervisor to graduate students,

> academics are teachers and supervisors, this is also pedagogical, it is about teaching and learning but it is very different than teaching in a classroom. With grad students we can be mentors, some grad students will be doing this job in a couple of years so if we can provide some training.

As supervisors, all professors see themselves as being role models for students and junior academics. Isabel describes this role best, "that means sharing the enthusiasm and having fun as part of the intellectual journey".

Contending that the teaching role is one of facilitation, António explains how he sees his job:

> I think, I've always seen my job, but I see it more clearly now, as facilitating their task, that's not to say that I am trying to make them do all the work, but facilitating their task which is to better understand, to make conceptual links and so on, in the subject that happens to be my task to teach them.

He does not see himself as an intellectual, but as "a university professor trying to do my part to train students to make new discoveries, but I don't see that as being an intellectual, maybe I should". The role of the academic in teaching is to providing the opportunity for students to come together and meet, among themselves and senior colleagues, to interact and discuss interesting issues, to learn how to think in a sophisticated way, to learn from each other, to be able to critique and evaluate, to develop skills that they can use to enhance their quality of life.

At the same time professors are also researchers, contributing to augmenting knowledge, as Isabel continues,

> there is also the augmentation of knowledge. A good teacher is someone who is always curious and someone who is always trying to do something more to experience more deeply. And this is what we have to translate to the students. It doesn't really matter what you teach them as much as giving them the power of asking themselves questions, of looking for things.

Professors are knowledge producers and intellectuals, and it is important that the university supports the various roles, as José Luis points out:

> to help us develop our knowledge about a range of phenomena that exists in the world and create opportunities for people to talk and explore in ways that they couldn't in other environments, for example, business or research institutes, and the range of other kinds of institutions we have, there is a flexibility and freedom and support for intellectual curiosity that you don't find elsewhere.

According to José Luis, "both in research and teaching the thing is how to use that opportunity of freedom to be intellectually curious and stimulate and learn and then share

that knowledge in useful and meaningful ways".

Emphasizing the need for, and the difficulty in, achieving a balance between the teaching and research roles, Isabel speculates whether "not everyone achieves that balance, but we need to be active producers so that we can contribute back to the community with knowledge". Individual academics, as well as institutions, tend to concentrate with varying degrees of importance, on either research or teaching. For Margarida, the teaching aspect is very important, "some of us are more geared towards teaching, as I am. I think teaching is important but it's very hard and demanding, but very important".

Similarly, António regrets that finding the balance between the various roles is

> a continual struggle, I never find that I am doing enough in any particular domain. I am heavily involved in teaching wise at McGill in this Faculty Associate position that I have which makes me feel that I'm not doing enough research. I'm always sort of jealous of my colleagues who seem to be able to not pay too much attention too their teaching and I find it hard to do that. I spend a lot of time on teaching and don't do enough research.

Students are also aware of the precarious balance between the teaching and research roles of professors. While appreciating that his institution's main focus is towards inquiry, Bruno asserts that "the idea of research is important and you need to push the envelope as an instructor, to further as much as possible", he regrets at the same time that the research role "often takes precedence over the teaching" role. According to Bruno this situation is non-sensical

> in my mind it does not make sense because research that is not shared or communicated is not as valuable as research that's shared and communicated, and it's not sharing it with the community of researchers that are like you but with future generations to make sure there is some kind of inter-generational communication.

Students particularly lament that the research facet of academic life is often the focus of professors' academic work at the expense of the teaching aspect.

For many professors the teaching and research roles are interconnected to such a degree that they have become inseparable, as Raul points out "what I do as a teacher I think that it is research, that I think about and I study". While some see teaching as the core of their role as academics, they have "trouble sometimes trying to tease out what is teaching and what is research when I write the annual reports" as Melissa highlights. She explains that,

> when I supervise my students doing research, it's research but it is also teaching. So I think they go hand in hand. Teaching research is an important part of it. Also getting ideas out to people - out there - right now we want to get to other teachers, so I have attended teacher conferences, try to publish where teachers will see it, that's really important.

Academics are also administrators. There is a substantial work load that involves the administrative work of the university, and a number of respondents are highly disconcerted in the increase in this aspect of academic work with the implementation of new technologies. Margarida expresses it clearly stating that,

> the most tiring part of being an academic is administration. I think that Universities are really in a threat now because the government says 'you have to cut administration by 15%' and they did. I think universities should be governed by the teachers and that there should be a minimum of administration. Now you have the dean, the associate dean, and who else, and instead of the real work of a university we have to answer reports!

To have a public role is also important for most academics. For Isabel,

> it is important that academics occasionally make themselves available to media or make sure that their knowledge does not just travel in the absolute most esoteric of circles but that in fact it does get out to other kinds of audiences. I think that all of the academics that I know and respect also have a community practice. So in

> some ways they are not just involved in the university but are involved in other aspects of their society.

According to Isabel, not only does the involvement in the community within and outside the institution improves the work of academics, but it also "services students better". Sharing Isabel's belief in contributing to both, the community at large and the institutional community, Jessy contends that, "I have a responsibility to contribute to the institution, to try to make it a better place for people. And I see my role also as giving back to society, because it is a privileged position. I feel personally that I should be doing something to contribute".

Summarizing the intersected roles of academics, Isaac states that

> at one level you're like a low level movie star in that you have your own little career, your projects, your own degree of fame in some circles you might have some fans, your peaks and downs. On the other hand you are part of a bureaucracy. As an academic these days you are a lot of things. The role of the academic is more and more to be a middle manager, and an accountant, running projects, and such things that previous generations of academics did not have to do – leaving aside the official administrative things I am usually involved in.

Realizing that the demands of such multiplicity have recently increased, Isaac reflectively notes that, "it probably was not always so complicated". The complication arises from, "more and more technologies being implemented" at the institutional level, and professors have come to assume the roles of middle managers and accountants. Often, technological implementation replaces support staff. As a consequence, what tends to occur if that the work of the support staff is 'downloaded' onto professors. This highlights the broader context of the technologies, which is perceived to affect academics even when it is not directed specifically at them.

Graduate students, like professors, identify multiple roles for themselves as

academics. Bruno points out that, the role of graduate students is "to further the knowledge in a field and to learn how to do that reliably". The role of the academic is also to be "an intellectual", to be "an inquirer, to push the envelope, to examine my conceptions and try to see how else can I answer this, how can I expand this, how can I refine my views" and "as an instructor is really the other side of the coin, be a guide or facilitator, try to bring people to realize where they stand and how to become autonomous".

As with the related roles of higher education, the various roles of academics are not predicated on technological integration. Technologies tend to be understood as more appropriate for the clerically related roles of academic work and less the teaching, research, intellectual, and knowledge creation roles. Implied in respondents' comments is the notion that the significance of the latter roles increases proportionately to the increase in technological implementation.

Conception of Knowledge

Academics' conceptualizations of knowledge are articulated not in terms of possession and its corollary, transmission, but in constructivist terms. Professors define knowledge in terms of the activity of learning instead of something that one possesses. Knowledge is not a product or a list of things one knows. Rather, it is a set of practices that are socially constructed, ever changing and highly influenced by specific contexts. Knowledge has to do with meaningfulness and the uses to which it is being put to, and it does not exist apart from the people creating it, discussing it and trying to understand it.

There are different kinds of knowledge in a university. Traditionally, the

knowledge of which one speaks is the factual type of content of a discipline. Beyond that, because professors expect of themselves and their graduate students to be able to use content in a variety of conceptual ways, how to use acquire and transform information is another kind of knowledge. As José Luis explicates, the epistemology of the discipline is often taken for granted by many academics and one of the challenges for graduate education in the university is to make this explicit to the students, because "what you draw on when you go into a classroom and teach is more than a collection of ideas or concepts".

For some professors, knowledge is about a certain ability to analyze and evaluate events and issues. As Isaac claims, knowledge is "the constant ability to move out of some little thing and be able to see all the other things that might be related to it and all the kinds of issues that would arise from it". For other professors, like Paula, knowledge is about particular ways of doing things, "it's more about methodology then knowledge, I'm more interested in how things work than what they mean. For me the idea of knowledge would be connected to the idea of understanding the mechanism of things".

Professors' definitions of knowledge are related to a sense of power, as Paula says, "knowledge is power, that's the first thing that comes to mind". Knowledge is not neutral but implies power in its inevitable link with cultural capital.

For most graduate students, knowledge is more than a collection of facts, rather as Cindy claims, "I guess I'd say that knowledge is the sum of all the concepts in your mind. The concepts that are related to many others are probably your 'expertise' – what you know a lot about". For Zé Manel, knowledge is also instinctual, "everything we think we know, and everything we truly know instinctually". For some undergraduate students,

however, knowledge is seen more in terms of an object. For example, Luisa claims that,

> knowledge is just having facts and ideas that are already in existence, like to know that the sky is blue or to know that the Prime Minister is this person or that person. So you have to have ideas and concepts that are already accepted because then if it's not accepted, if it's not something that everybody somehow believes that it's true that this is the case, then it's either a theory or an invention.

For other students, knowledge is a tool "we use it to discern the patterns of life, and take advantage of these patterns in order to make our life better and easier, i.e. to escape death, reduce pain and suffering", João hopes.

Most professors and many students agree that knowledge can be challenged and therefore their own knowledge is also challengeable, and that it is amidst this relativity that one can see learning as conceptual growth. Contrary to believing that there is one form of knowledge that exists and can be transmitted and that once transmitted it is possessed, academics believe that knowledge is constructed. The integration of new technologies is not perceived to be conducive to the development of knowledge creation environments, but highly useful in the storing and sharing of information. And, respondents make it clear that there is a differentiation between information and knowledge, although the distinction between the two is not always made clear in technocratic discourses. The epistemological believes of academics, about whether knowledge is perceived as something that can be challenged or something that must be accepted, as well as whether it can be transmitted or needs to be constructed, have implications for the conception of teaching and learning, and can influence decisions about technological practices.

Some respondents defined knowledge as an object, perceived as independent of

people's experiences, and as an action. Both these categorizations are utilitarian. For other respondents, knowledge was perceived to be an interaction. This is the case with many respondents. Regardless of whether knowledge is seen as a practice or as a tool, most students reiterate the importance of human interaction in the practices that create it. Relating the conception of knowledge to the conception of teaching and learning and viewing both as constructivist, Bruno highlights the importance of the human interaction in the process of creating knowledge,

> I think part of my philosophy being socially constructivist, human interaction is very important to learning and to teaching and to growth and I don't see how that can be replaced by the technology, or why should it, we are human beings and we should not lose site of that.

Knowledge, like power, is not something one holds. The term 'knowledge' has a very different meaning when defined by academics than when defined in relation to the corporate centered 'knowledge society' where knowledge is equated with access to, transmission and exchange of information. This access and abundance of information make it imperative that knowledge be defined not in terms of something one can possess but rather, as respondents highlight, in terms of "a constant ability to move out of something and see what else is related to it", or in terms of an "understanding of the mechanism of things", or in terms of "the activity of learning". This is the socially constructivist[3] approach where knowledge cannot be transmitted or transferred.

This view of knowledge as constructivist and constructed, rather than obtained and transmissible, is an important characteristic of academic culture. Coupled with the

[3] For an extended development of the constructivist view of knowledge and scholarship see Windschitl, M. 2002. "Framing constructivism in practice as the cultural negotiation of dilemmas: an analysis of the conceptual, pedagogical, cultural and political challenges facing teachers". *Review of Educational Research,* 72 (20), 131-175.

perception that many aspects in the design and implementation of new technologies are based on a transmission of information model, it sets the direction of the appropriateness of certain uses of the technologies in the process of creating knowledge. Technologies are considered to be more appropriate for those instrumental practices that are necessary in the creation of knowledge.

Academic Communities

Academic communities are conceptualized in terms of academics' perceived integration into the various facets of academic life. The level of integration varies, not primarily along economic or political lines, or other external forces, but by the level of belonging that academics feel, leading to the identification of several communities. In descending order of integration they are: the departmental and research communities including graduate students; the disciplinary community; the intellectual community, and the institution. Academic communities, in the sense used here, are communities of practice and communities of interests (Bellah et al.1985) that are related to teaching, learning, and research. Although respondents are involved with all theses communities the level of identification varies with each community. The perceived level of integration, whether high, low, or medium, is important to the extent that it reflects the relation between using technologies and academic culture.

Most respondents identify the least with the institutional community. However, such identification varies by level of involvement and academic status. The more involved in the university-wide community, the more integrated professors feel into the institution. As Isaac points out,

> I feel that I am part of a larger community at McGill, partly it just happens that you start to be pulled more into things and you start to have a sense of a larger community, and you identify with the institution because you become more committed to solving its problems. When you arrive and you are young you say 'oh the squares who are running things', partly it is just the socialization that goes on. Also, I am on hiring committees and people feel that there is a new thing taking shape.

Identification with the institution strengthens with time as academics become more involved in the university senate committees, as António mentiones, "I am also a member of the Senate this year which suddenly opens up a whole new area that I've not seen before. So yeah, I do feel a strong community". Similarly, for José Luis, the level of integration one feels increases as one becomes part of certain associations and committees, "I probably see myself these days as part of the University community then the Physics department community because I have started to make links of different kinds in many different places". He adds that "ten years, five years ago, even, I would have said the Physics community, I would not say that anymore".

In general, junior academics fell less integrated in the institutional community than senior academics. Raul contends that it took him three years to feel a sense of belonging, he is no longer uncertain about being a part of the institution, "I have been here for three years, so now I feel that I am part of a Université de Montréal culture". At the same time, he highlights the dynamics of belonging to the institution,

> this university is very mysterious, because I come from a country in which people from universities have political colours. The university is run by the dynamics of national politics and the people who are from one party or the other they are going to impose the policy of that party, so it's a very political fight all the time.

He points out that in the North American education system, conversely, "there is nothing

similar to any kind of external politics and nothing is open, nothing is clear, everything is done behind doors. And it's not a group, they are not really group politics they are people politics". Providing an example of the intangible nature of institutional relations he explains, "I was invited not long ago to be part of a committee about cultural diversity at the University. And you find somebody that you don't know calling you to ask you if you would like to be part of this committee and you don't even know anything about it". While he refused at first, upon insistence he reluctantly accepted,

> suddenly I jump into something I didn't know anything about, I got the letter from the Rector nominating me and I went to the meeting with people I never saw in my life. I didn't know anybody, and they didn't know me, no one knew anybody and you have to work in a committee. So, this university is kind of weird, it's like each one contributing in things that you are.

These institutional links, despite the criteria for their formation not always being clearly defined or obvious, facilitate a sense of belonging to the institution and the university community.

While acknowledging that, "I feel that McGill is a bit of a community", Isabel is unsure of "how integrated into it I feel". She adds that while not unhappy at her institution, "there are other ways of belonging that touch me more directly and more frequently than the McGill belonging does". Recognizing the existence of a 'McGill culture' at the institutional level, that she perceives to be trapped in an image it portrays of itself as an Ivy League institution that may not be as accurate as it once was, Isabel is highly ambivalent about participating in a culture that, on one hand, tends to be conservative in terms of gender and different kinds of diversity, but on the other hand, is a less neo-liberal institution than others to the extent that it has taken a less neo-liberal path in various issues, including new technologies. Emphasizing the inevitability of some

level of identification with the institution, Isabel asserts that

> the McGill name precedes you wherever you go and that is a slightly weird experience, that's what people's perceptions are and McGill's sense of itself is. I am not sure that's my experience of McGill do I feel part of that? No. Do I have a lot of respect for that if it is not bolstered by actual practices? Not particularly. Do I feel uneasy with that? Yes. 'Oh you're at McGill' yes, or otherwise I'd be stupid if I worked somewhere else?

Regretting that the institution's image is often used to evaluate the person, many professors have a certain discomfort with institutional identification.

Similarly articulating conservative values as a factor that contributes to a low level of institutional identification, Margarida claims that, "while there are more women now in the Department, U. of M. is very macho as a whole". In addition, "they are too proud and not open enough, they are too old an academy and new domains are not considered enough and I think they should. They value science too much, hard sciences are valued more [than soft sciences] but they are not integrated enough in general". This alludes to a certain conservatism concerning the lack of a multidisciplinary direction of academic relations among the Faculties. Undeniably, the institution's political and cultural leanings, in addition to seniority and community involvement, are important factors in terms of belonging to an institution.

Although not having a high sense of identification with their institution, professors do value particular aspects of it. At both institutions, they value the high standard of the students, the international demographics of the faculty and the student body, and the level of department decentralization, independence and academic freedom. For some professors the quality of the students cannot be overstated, as Isaac points out "what I value most about this institution is that it gets really good students, people who

come here from other places really appreciate it and those that leave miss it. Partly because it is in the city of Montréal and partly because it is known world wide".

For Raul, the most valuable aspect of his institution "in spite of the criticism I did about academic life, is that this is a very serious university, people here are rigorous they are serious, and that's what I was looking for, a serious environment to work in". Similarly, despite believing that the institution is highly patriarchal and conservative in nature, not feminist to be sure, Margarida appreciates, like Raul, the demanding nature of the institution she works at "very demanding, very stimulating, it's known, and it's polyvalent[4]".

José Luis has been at his institution for thirty years and he values its high academic standards,

> I think it's very easy to answer that, but it is less easy to give a small enough answer. I think I value the high standards this place has, by and large, there are places in the University where regrettably those high standards are lacking, but there are fewer of these as there used to be. I also like the tradition of excellence and the tradition of independence, and also the diversity of people working in all the buildings around us, working on all sorts of different things but working together in some way.

In addition to high standards, and academic independence, another aspect of value is the extent of internationalization of students and faculty,

> the remarkable variety of people (both students and faculty) you meet here, both as students from different backgrounds, and of course colleagues from different backgrounds; its fairly international, a very multi-cultural kind of environment and that is something you don't get in every campus. In fact, it's one of the nice things about McGill and I would not want to loose that.

There is an implicit acknowledgement in professors' comments above (and students[5])

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[4] Interview conducted in both French and English, and this quote was translated by the author.
[5] See also Chapter Four, pp. 184-185.

that academic culture is to some extent elitist, in the sense that it serves a distinguishing function. This is not an entirely negative view. Professors do indicate that they are privileged, that they embrace some of the values and standards of the institution partly because they create hierarchies and distinctions.

Students see the value of their institution in more practical ways, as João points out, "I like the size of my classes and professors are really knowledgeable". He perceives the value of the institution in social terms, "I learned so much more through the extensive extracurricular activities that McGill offered than my classes. I was in the debating club, wrote for the paper, and joined the writing club and the business club. In that way, McGill was valuable". However, he adds that according to his experience the University's focus is on maintaining a certain image of itself rather than on education,

> the professors and classes I had ranged from interesting and supportive to downright hostile. Overall, I had the impression that McGill was a place that struggled to uphold a certain image rather than value education for its own sake, and ultimately too scared to allow risky leaps, sticking to the status quo. Some people may find this image appealing, but I find it alienating and nauseous.

Some graduate and undergraduate students feel integrated into the social life of the students' community, as João's opinion exemplifies,

> I find it really depends on the will of fellow classmates or professors to create a community. I spend more time pursuing my own interests through undergraduate clubs than getting to know my fellow classmates. In that way, I felt kind of connected more with the undergraduate and overall McGill scene than with the department's community.

He adds that the people he associated with were not only from his classes, and "not because they were in my program but rather for a more personal, individual reason like shared interests".

Similarly, Romi feels the strongest sense of community within the smaller group of students and professors that have formed an education development centre in her department. She explains,

> because the way it operates it gives us much more of a choice, it is a small group of people, all of the students are in one room together so we have a lot of interaction, and then I think it helps us feel a part of it first, and then we can feel part of the department and the other students, because we feel that there is something behind us, this is who we are, the group we are a part of.

Many professors feel less a sense of belonging to the institution and identify more with their department. Isabel tends to identify more closely with her Department because,

> departments tend to be a bit post-holist at McGill, so interpersonally you might have connections with someone else with some sort of commonality. I feel much more sort of plugged into, much more active in, and part of my Department and more a part of the Communication Studies community in Montreal, then in Canada than necessarily feeling a huge part of McGill.

Explaining that a sense of community needs to be developed over time, Raul, like Isabel, has developed a strong sense of identification with the department. As he explains,

> I had a really hard time at the beginning, it was a cultural shock, but now I have a sense of community here in my Department. We're very fortunate that we are a department that doesn't have any enemy groups among each other. It changes depending on the situation, the alliances change. But in the sense of responsibility with the Department, they are very serious about the careers of the professors and the students. The Department cares about the students and I think I feel part of that.

Other professors value the level of decentralization in the academic management of their departments. As Isabel asserts,

> by that I mean our department and our chair, and our system of governing ourselves, we've been allowed to do what we want in the department and the dean and higher ups are not micro managing what we do. If [the chair] wants to give a faculty all one term to do research that will allow them to get tenure, this does not

have to have to be approved by the dean.

Isabel emphasizes in regards to her Department that, "that level of autonomy in terms of the academic management of the department is vary rare these days and I think that it is quite important, and the value of that comes up again and again".

Students also value the academic freedom that they expect from their institutions. Romi for example, points out that "what I value most is probably the amount of academic freedom, that is important and I don't think it happens anywhere else as much where people set their own agendas so freely". Her definition of academic freedom entails both the department and the institution, "departmentally in terms of program's individual professors, who is doing what, who comes to speak on campus who doesn't, the things you can be involved in, the plays that students put on and make it open to other students".

Some undergraduate students, whether departmentally of institutionally, feel more integrated with those who are going through similar experiences, "I think more than anything I'm part of the Engineering community, not so much the McGill community. And I think that comes from the fact that, these are people that I relate to the most about my educational experience because I know them, and I can relate to how they go about learning". Palmira adds that, in terms of a larger McGill community "the academics kind of goes out of the window if you put all McGill students together. I would say that I identify with minority students. Once again it comes back to this: going through a similar situation and experience as I am".

Many professors perceive a strong sense of community emanating from commonalities in their research areas, and less from their institution or department. Contending that competition within the department precludes a sense of community, as

Margarida laments, "there's a lot of competition between colleagues in the Department, I think there should be more synergies between the department's members but also among university departments. Because of course it's nice to be more empowered than the neighbour but it's also nice to collaborate". For her, "the biggest community" is based on common research interests, "for now, for me it's more interesting, I do a lot of collaborating with TéléUniversité and maybe I'm in a domain, which is more research development, that makes me separate" from the rest of the faculty in the Department. Also emphasizing the high level of identification within colleagues in his research area, Raul indicates that,

> in research I have a strong community, people that I collaborate with for many years. People who are colleagues and some of them are good friends. Our link is researchers who are studying interaction and collaboration. I'm more linked to people in Psychology and Education. But it's mostly a community that it's not here, it's spread out in different universities, people are at Laval, at McGill, at University of Toronto, a University in San Diego, UQAM, some people in France.

Similarly, Melissa feels part of "a very small academic community related to the action research that I am doing". She also feels a high level of integration her graduate students, "the community I spend the most time with is my graduate students. I make an effort to make that a community. I am in touch with teachers and I go to teacher conferences and present papers, so I feel that is a little teaching community".

In addition to perceiving a sense of belonging to their department, their research area, and their institution, academics strongly identify with an unspecified intellectual community. As Paula ascertains,

> increasingly, I see the value of being part of a community where you share ideas, and being in academic meetings where you realize that there's a lot of smart people who, between all of us talking

> together, can come up with a better idea, and that's something that's been really good. Instead of being a person who knows the right way to go now I see that there are a number of ways that you can come up with something.

Students, like professors, report various levels of identification with their university and intellectual life. Interestingly, most undergraduate students place their identification as university students in comparatison with the outside society, as Palmira points out,

> as I got older I saw how people who did not have a university degree and their lives and I did not want to do that. It's not really about money, it's more about the way you see things. At least the people I know who did not go to university had a very local perspective of everything, where as other people even if you don't agree with what someone says at least they have the decency to think about it.

Furthermore, many students believe that they are part of an elite. Especially graduate students, as Miguel's comments highlight,

> not everyone gets a Masters or a PhD. In fact, only 50% of people who start the degree ever finish. Not everyone can handle it. I wear it like a badge of honour. I earn respect with it. As most people in a university city like Montréal, can get a bachelors, it is the rare few that can go beyond that and handle the challenge it represents.

Similarly, Cindy defines her affinity with the academic community in terms of the society at large,

> this is clear when you talk to people with actual jobs! I would describe it as learning/discovery/understanding-oriented. The immediate goals always change so that the main goal is to understand something better. Also, I feel a part of the international community of my discipline, which consists of people like myself (although on average they're older and male) who are learning and communicating new discoveries in Physics.

Other graduate students have a similarly broader identification with the university system

and associate with an intellectual tradition that crosses national boundaries. An example is Bruno who points out that, "I don't feel more allegiance to McGill than I would to the next university that I'll be hired at. I feel that I belong to the university system and that's what my role is. And in a sense I see that as world wide, a system that's being propagated around the globe". Additionally, and exemplifying the sense in which academics belong to various communities simultaneously, Bruno claims that,

> I see part of what I've been acculturated into is the role of an academic or scholar or a university professor who does research and teach. Beyond that, I would feel a belonging to my disciplinary area but in a broader sense being in the Social Sciences and Humanities as opposed to being strictly in Education. And then superimpose on that, the more epistemological community, which I belong to, which one could say is more constructed, so it's really a network of embedded cultures.

Students' sense of identification with their department in the first instance rather than with the institution is understandable to the extent that they will be out of the university and consequently do not make a long-term commitment.

As seen, professors and students identify with several academic communities. Sequentially they are, the departmental community, the research community (this includes the discipline) nationally and internationally, the intellectual community, and the institution. The departmental belonging emphasizes the extent to which all academics in the department share common academic, administrative, and social practices: meetings, speaker series, other guest speaker occasions, parties at the beginning and at the end of the semesters. Identification with the research and discipline community highlights the extent to which professors collaborate and maintain links in their research area with colleagues from outside their department and their institution. Undergraduate students identify less with this kind of community, although graduate, especially doctoral students,

begin to have a sense of the world of scholarship, by writing papers for participation in conferences, for example. Related to the research community is the identification with an intellectual community. This is the extent to which professors (and students to a lesser degree) are recognized as scholars and contributors to the creation of knowledge related to a certain capacities for critical and analytical thinking. The institutional community, the least identified with, underlines the extent to which members of a university share a common physical place of work and are committed to common missions and goals. As administrative functions are an aspect of academic work, all professors belong to the institution, even if at a perceived low level. Students identify with the institution in terms of sharing similar academic and social experiences, and by forming associations with various social and academic clubs.

The variation in identification with the different communities is significant to academic culture and its relation to technologies to the extent that academics' sense of belonging to each community partly determines their decisions related to technologies, suggesting that academics base their cultural practices on their department, discipline, research, and their intellectual communities. The fact that academics identify least with their institution is coherent with their contesting the institutional educational technology policies and initiatives that mandate the use of technologies in the creation of knowledge.

In not mentioning technology as a factor in expressing and representing their communities and sense of belonging, academics challenge the institutional discourse. Technologies can clearly be used for electronic connections, but the sense of belonging that academics perceive tends to be independent of any technologies. For some students, however, who tend to be socially shy and who would not normally interact with

colleagues or professors on campus, new technologies provide some sense of connection to the community, as Luisa asserts "I don't feel part of an academic community, but somehow technology, like email, has connected me more to the university now than when I was an undergrad and did not use any computers, because I am a little shier and just to scan things on the Internet is different than standing in front of the bulletin board".

Academics' valuation of their institution was totally independent of the level of technological integration of the institution. The extent of technological sophistication was never mentioned as a measure of the value of the institution. Academics do not perceive a connection between the institution's competitiveness and the level of technological integration, contrasting with a claim in the institutional discourse previously examined.

As João asserts,

> in my view, the pursuit of knowledge must be based on positive values and go from there. Anything that is associated with it down the line, like technology, will ultimately be affected by this basic foundation. So it is not surprising that I feel that technology is not used to enhance knowledge, but rather for its superficial benefits. Ultimately, I think technology will always play a minor role. I mean Plato didn't need chalk to teach.

Perceptively, these comments summarize the relationship between academic culture, community, and technologies.

Of Technologies and the *Habitus*

The above analysis constitutes a re-definition of academic culture that is specifically related to the creation of knowledge in a university setting. Based on the cultural assumptions examined – conception of teaching and learning, role of higher education, of academics, conception of knowledge, and level of integration in the various

academic communities – academic culture can be defined as a set of practices that follow from the beliefs in a conception of teaching as facilitating student learning and student learning as conceptual growth, in higher education's primary role as developing critical thinkers and citizens, in the role of academics as knowledge producers and intellectuals, in a conception of knowledge that is constructivist, and in a strong sense of identification with the department, the research area and the discipline.

Thus defined, academic culture has important implications for the integration of technologies. Culture is constitutive, not in the form of value orientation or as guides or models for action, but as fairly ingrained in the *habitus* – the habituated practices of humans, these are meaningful practices constituting a way of life – of a *field.* The *habitus* includes the notion of agency, without the idealistic, subjective pre-conceptions and at the same time with the concept of the *field*; the agent's action is grounded in objective social relations, without succumbing to deterministic notions of objectivist thought. For Bourdieu, symbolic aspects are inseparably intertwined with the material conditions of existence, without one being reducible to the other. The concepts of *habitus* and *field* transcend this false dichotomy.

The *habitus* can be described as a practical sense that inclines agents to act and react in specific situations in a manner that is not always calculated and that is not simply a question of conscious obedience of rules. Rather it is a set of dispositions that generates practices and perceptions. The *habitus* is the result of a long process of inculcation, beginning in early childhood, which becomes second nature. According to Bourdieu's definition, the dispositions represented by the *habitus* are "durable" in that they last throughout an agent's lifetime. They are "transposable" in that they may generate

practices in multiple and diverse fields, and they are "structured structures" in that they inevitably incorporate the objective social conditions of their inculcation (Bourdieu, 1993). This accounts for the similarity in the *habitus* of agents from the same culture and authorizes, I suggest, speaking of an academic *habitus*. The cultural assumptions of academics are the *habitus* on which decisions about technologies are made. The cultural assumptions determine, to a great extent, the technological practices of academics. This leads to an understanding of the contested practices in integrating new technologies. This research shows how the academic *habitus* generates analogous preferences across a broad range of cultural practices. The dispositions are "structured structures" through their ability to generate practices adjusted to specific situations. This explains how academics adopt certain technologies based on the policies mandated by the institutions – the structuring structures.

Agents do not act in a vacuum, but rather in concrete situations governed by a set of objective social relations. To account for these situations or contexts, without falling into the determinism of objective analysis, Bourdieu developed the concept of the *field.* Any social formation, according to Bourdieu, is structured by way of a hierarchically organized series of fields, including the educational field, each defined as a structured space with its laws of functioning and its own relations of force independent of those of politics and economy. Each field is relatively autonomous but structurally homologous with other fields. Its structure, at any given moment, is determined by the relations between the positions agents occupy in the field. A *field* is a dynamic concept in that a change in agents' position necessarily entails a change in the field's structure. The formulation of the notion of *field* also represents an attempt to apply what Bourdieu calls

a "relational" mode of thought to cultural production. This requires a perception of the social world that sees each element in terms of its relationship with all other elements in a system from which it derives its meaning and function. This recognizes the importance of objective relationships between positions, as opposed to interactions among agents. Bourdieu explains the formation of dominant academic cultures as the dominance of certain cultural assumptions over others, stipulating which practices are appropriate and which are not. The conventional academic practices of creating knowledge are essential aspects of the *habitus* in the *field* of university education.

In any given field, agents occupy the diverse available positions, and engage in competition for control of the interests or resources which are specific to that field. In the educational field (and the cultural field) competition often concerns the authority inherent in recognition, legitimacy and prestige. Authority based on legitimacy and prestige is purely symbolic and may or may not imply possession of increased economic capital. Bourdieu's development of the concept of symbolic power based on diverse forms of capital which are not reducible to economic capital is an integral part of his theory of practice. Academic capital derives from forms of education and can be measured in part by degrees or diplomas held.

Two forms of capital, symbolic and cultural, are particularly important in the field of cultural production. Symbolic capital, the degree of accumulated prestige, ability, and legitimacy is founded on a dialectic of knowledge (connaissance) and recognition (reconnaissance). Cultural capital concerns forms of cultural knowledge, competences, and dispositions. Bourdieu defines cultural capital as a form of knowledge, an internalized code or a cognitive acquisition, which equips the social agent with empathy

towards, appreciation for or competence in deciphering cultural relations and cultural artefacts. He suggests that a work of art has meaning and interest only to those who possess the cultural competence into which it is encoded. Possession of this code, or cultural capital, is accumulated through a long process of acquisition that includes pedagogical action of the family, educated members of the social formation and social institutions (institutionalized education). Forms of capital are unequally distributed among classes and class fractions. The proper type and amount of cultural capital may be converted into economic capital, through advantageous placement in the job market, for example, but they are not reducible to each other. Possession of cultural or symbolic capital does not necessarily imply possession of economic capital, and vice-versa.

The formation of academic culture is based on struggles between and among the educational field for symbolic power, through cultural, academic and intellectual capital. Dissecting the relation between systems of thought, social institutions and different forms of symbolic power, Bourdieu contends that cultural goods and practices do not exist outside a complex institutional framework, which authorizes, enables, empowers and legitimizes them. In his highly elaborate theoretical framework of social practices, one of his central concerns is the role of culture in the production of social structures. Like Foucault, Bourdieu sees power as diffused and as often concealed in broadly accepted, often unquestioned ways of seeing and describing, but unlike Foucault, in Bourdieu's formulation this diffuse power is symbolic power and is closely intertwined with, but not reducible to, economic and political power, and thus serves a legitimizing function.

In the chapter entitled "the conflict of the faculties" Bourdieu argues that

> as authorities whose position in social space depends principally on the possession of cultural capital, a subordinate form of capital,

> university professors are situated on the side of the subordinate pole of the field of power and are clearly opposed in the respect to the managers of industry and business (1988:36).

While Bourdieu's analysis is based on the French system, which is more centralized than North America is (like Britain) where it has relatively decentralized higher education structures, the notion of cultural capital in his model of interaction and cultural reproduction provides an understanding of contestation of certain uses of new technologies as symbolic capital, which in turn maintains intellectual capital. As Bourdieu points out,

> the university field is like any other field, the locus of a struggle to determine the conditions and the criteria of legitimate membership and legitimate hierarchy, that is, to determine which properties are pertinent, effective and liable to function as capital, so as to generate the specific profits guaranteed by the field (1988:11).

In the struggle for capital, the use of certain technologies is not perceived as spawning high levels of symbolic and cultural capital.

Education as a system of production and reproduction can only be fully understood if one treats it as a field of competition for the monopoly of the legitimate exercise of symbolic power in the creation of knowledge. Such a construction allows us to define the field of restricted production as the scene of competition for power to grant cultural legitimacy, but also as a system specifically designed to fulfill a legitimation function; as well as a system for reproducing producers of a determined type of cultural goods, and the consumer capable of consuming them.

The education system fulfills a cultural legitimizing function by reproducing, via the delineation of what deserves to be conserved, transmitted and acquired, the distinction between the legitimate and the illegitimate. In all forms of recognition (awards, election

to a committee, invitation to congress, publications) value is dependent on the very position of the individual in the hierarchy of legitimacy. The educational system claims a monopoly over the legitimacy of works of the past and over the production and legitimacy (through diplomas) of cultural consumers.

The educational system has an extremely slow rate of evolution, derived from its function of cultural conservation, and is pushed to the limit by the logic, which allows it to wield a monopoly over its reproduction. This conservative attitude of academics prevents them from embracing completely the imposition of new technologies.

The state has the power to orient intellectual production by means of subsidies, commissions and promotions, but the social position and the role of the intellectual may alter the government's orientation when this orientation threatens to modify academic culture. Academic freedom is part of the field and implies certain kinds of practices that act as a check on state and institutional powers. Respondents' perceptions of the technologies as originating from and significantly contributing to an enterprise-like model of knowledge creation implies that it can interfere with academic freedom.

The educational system contributes substantially to the unification of the market in symbolic goods, and to the generalized imposition of the legitimacy of the dominant culture, not only by legitimizing the goods consumed by the dominant class, but by devaluing those transmitted by the dominated class and by tending, in consequence, to prohibit the constitution of cultural counter-legitimacies. Bourdieu analyzes a period of rigid hierarchy in the educational system whereas today's hierarchy of professors is more varied including tutors, part-time instructors, and adjunct professors. The use of new technologies can be considered a form of economic capital, and at the same time, and

inherently contradictory, while the dominant corporate class is adopting technologies seemingly without contestation outside academia, academic culture is not legitimizing the use of those technologies, implicitly devaluing them as an economic resource. The perception that the use of technologies in certain academic practices lacks legitimacy increases the symbolic and cultural capital of academic culture.

According to respondents, the use of technologies may be an appropriate and effective way to organize a conference, but it is not considered to be an appropriate academic practice to conduct the conference online. The contribution to knowledge, measured through conferences, seminars, guest lectures, and in publishing articles and books creates symbolic and cultural capital. This form of capital requires face-to-face interaction in order to be produced. Similarly, online publishing and course delivery do not have the legitimacy of conventional courses and publishing. Academics are not adopting certain technological practices because they are not considered legitimate within the *habitus*.

A constructivist view of knowledge confers it an enormous amount of intellectual capital. The distinction and separation of information from knowledge shifts the scales of power. Intellectual capital is cultural capital. In university education, power is in the process of creating knowledge, not in the availability of information.

Academic culture is reproduced based on symbolic power. Academic culture is hesitant and questions the integration of technologies in academic work because of the perception of institutionalization of scholarship and the pedagogically challenged nature of some uses of the new technologies. Accompanied by a constructivist view of knowledge, this suggests that using new technologies reduces the cultural and intellectual

capital of academics. The liberty to determine the design and delivery of one's own courses is as important as the liberty to determine the intellectual issues with which one wants to engage. This highly significant aspect of academic culture is perceived to diminish rather than augment with technological implementation. The practices and discourses of contestation are part of the academic *habitus* in which both professors and students are immersed.

Conclusion

It is my contention that the academic practices and discourses of contestation in relation to new technologies are largely due to entrenched habits and practices of academic culture. In two Canadian universities, academic culture is characterized by a philosophy of teaching that is constructivist, the view that the role of higher education is to expand the mind, the view that the role as academics is to create and guide knowledge, that knowledge is constructed, and that the community they identify most with is their department and research community. The analysis in this chapter suggests that these assumptions underlie the use of technologies in the creation of knowledge.

The tensions between communication technologies' potential to be equalizing and liberating and as extending existing inequalities and repressions, apply to all communication eras since the printing revolution. When it comes to the integration of technology in unversity education, however, technocentric discourses and practices have not yet been normalized, despite the institutional policies and initiatives advocating this. The *habitus* of university administrations are clearly different from the *habitus* of academics. My research suggests that a contestation of the uses of new technologies in

scholarship is part of academic culture that values autonomy, academic freedom and intellectual identity, as is evident in the academic discourse on the integration of technologies.

The perception that the technologies tend to be more appropriate for transmission than for constructivist modes of thinking and educating leads to considerable struggle in academic culture. In the former model communication is reduced to its transmission function and information is equated with knowledge whereas the latter model emphasizes education as the development of critical thinking for the continual creation of knowledge.

This chapter examines respondents' perceptions that the use of technologies may be marginal to some practices in cultural production and that contesting the use of technologies for the creation of knowledge is perceived to increase symbolic capital.

In academia, as in the cultural industries, contesting the use of new technologies increases symbolic and cultural capital. Contesting means praising the benefits of using new computer technologies yet simultaneously acknowledging the draw backs of such uses. Respondents' view the role of higher education to be one of developing critical thinkers, and while technologies considerably facilitate this development, the physical interaction remains a requirement of academic culture. As the analysis in this chapter indicates, many signals emanating from technological integration are antithetical to deeply held academic values. Yet, academic culture does not inoculate professors and students from technological pressures. It is in this state of pressure and struggle that academic culture is formed and maintained in an always negotiating and shifting set of activities.

Chapter 6
Academic Culture in the Information Age

> *Technological idolatry is the most ingenuous and primitive of the higher idolatries ...for its devotees, like those of the lower idolatry, believe that their redemption and liberation depend upon material objects... Technological idolatry is the religion whose doctrines are promulgated, explicitly or implicitly, in the advertisement pages of our newspapers and magazines - the source, we may add parenthetically, from which millions of men, women and children in the capitalist countries derive their working philosophy of life. ...So whole-hearted is the modern faith in technological idols that (despite all the lessons of mechanized warfare) it is impossible to discover in the popular thinking of our time any trace of the ancient and profoundly realistic doctrine of hubris and nemesis* (Huxley 1945: 317).

> *Mechanization has emphasized complexity and confusion; it has been responsible for monopolies in the field of knowledge; and it has become extremely important to any civilization, if it is not to succumb to the influence of this monopoly of knowledge, to make some critical survey and report. The conditions of freedom of thought are in danger of being destroyed by science, technology and the mechanization of knowledge, and with them, Western civilization* (Innis 1964: 190).

Introduction

It was Harold Innis's (1951) contention that the bias of any given culture resulted partly from the bias of its dominant medium of communication. He based his arguments on two kinds of media – space biased and time biased – through an analysis of the press contrasting visual and oral experience. Spatial bias identifies reality as purely material, visible, tangible, and measurable. The printed word made possible and permissible a dichotomous division of public and private interests. This division, as the quintessence of objectivity, is not conducive to the promotion of a variety of thought processes. Innis argued that the mass media of his time – the newspaper, radio and television – as instruments of communication, monopolize thought leading to "global" knowledge and a

deligitimization of the local tradition. For Innis, the dominant media comprised what he called monopolies of knowledge, which is a measure of control over time or history.

This practice pushed the world of philosophical thought – the only world capable of revealing bias – into chronic obscurity. This is the demise of the balance in ethical and intellectual practice precipitating Innis' call for a counterweight of time base tendencies and the role of the intellectual. What is central to Innis is to pit the bias of one medium against the bias of another, to see the oral tradition as a source of countervailing power to the spatial bias of print, maintaining speech (a culture of memory) as a vital counterbalance to print.

For him, one of the roles of the intellectual is to provide equilibrium to monopolies of knowledge and the university is the setting for the type of reflective work necessary to gain perspective on bias. The public role of the intellectual was being undermined when intellectual work, and the university itself, fell prey to the spatial bias represented best (but not exclusively) by the mass media, when intellectual life was de-emphasized because the role of the intellectual in fostering democracy and culture disappeared from view.

The public role of the intellectual is once again being discussed, echoing in contemporary policy debates. Innis, however, did not frame his concerns in relation to issues of relevance, or popularization of science, or the use of science for policy making. Innis' answer to the question of the role of the university and its intellectuals was clear: the university was accountable and relevant when it spawned reflection and dialogue. Innis had little doubt that intellectuals should be engaged with the major problems of their time but was deeply skeptical about the ability of social scientists to retain their

integrity as they serve on boards and commissions or gave policy advice. For Innis, the university could provide a setting for the type of reflective work necessary to gain perspective on bias – one's own as well as the bias of others. Indeed, the function of intellectuals is relevant precisely because they are in an almost unique position of being one step removed from the pressures of pragmatic experience and governance. Their relevance rests on their capacity to act as a counter-force to the single-minded pursuits undertaken elsewhere (Innis, 1951).

Innis had a certain skepticism regarding the neurotic quest for certainty at the basis of the science and reason tradition (or global knowledge). According to Innis, it was the task of intellectuals to sustain historical and philosophical work, and of the university to make it possible. "Education is the basis of the state and its ultimate aim and essence is the training of character" (1951:203). This education, however, was in jeopardy with the introduction of mass media. According to Innis, not only was the student in danger of being robbed of the intellectual experience that would adequately prepare him or her to make the decisions of a free individual, but what was being substituted reinforced all the negative characteristics of the newspaper and radio (1951).

For Innis, every student could and should be taught the value of good scholarship by participating in the oral tradition of the university, which encourages respect for truth, evaluations of bias, multiple perspectives, tolerance and skepticism. Knowledge was, in Innis' view, essential to the preservation of democracy and therein lay the public role of the intellectual[1] (1951).

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[1] For a more extended analysis of Innis's views on the role of the intellectual and the university see, for example, Liora Salter and Cheryl Dahl's article "The Public Role of the Intellectual" in Acland, Charles and Buxton, William (Eds.) 1999. *Harold Innis in the New Century, Reflections and Refractions* pp. 114-134.

Such a view of the role of the university and its intellectuals is especially inspiring as the potential for monopolization is also present with new communication and information technologies. Significantly, as Innis begins to write specifically about knowledge and its technological structures, he also comments on what he sees as the background of the collapse of Western civilization. The central characteristic of this collapse is a mechanization of art and knowledge, which creates an obsession with the immediate. There was no language of collapse in my respondents' comments, but there was the perception that the academic creation of knowledge is an essential part of culture, and that, in the extreme scenario, the encompassing of education by media imperialism accentuates a tendency towards a certain monopolization of thought that is contested by academic culture.

I import Innis' analysis of the role of the intellectual and the university in the dynamics of balancing monopolies of knowledge into an examination of academic culture focusing, not on the political economy of technologies but, on a broader cultural perspective. My study indicates that the echo is being heard in academic culture, which is characterized by significant levels of contestation and, in some cases, a critical approach towards the integration of new communication technologies in university education. Respondents' contestations and perceptions suggest that monopolies are being challenged within the universities. Academics are challenging institutional formations by claiming and maintaining their function as knowledge creators.

The integration of new technologies in university education has been historically the subject of a great deal of debate and controversy. Paralleling increased adoption there is also increased contestation. Whether facilitating communication or distance education,

technology is neither neutral nor apolitical. In this study, I have found that the use of technologies is highly contested by academics. As mentioned in Chapter One, contestation does not mean resistance, rather it is tied to moments of hesitation and questioning that reflect academic culture. Using technologies is putting considerable pressures on academic culture. The use of technologies is shifting academic culture, to some extent, leading academics to questions their own values. Despite instances where values are incongruent with the use of technologies, in practice, professors and students continue to use them. Struggles are evident throughout respondents' comments who report aesthetic, ideological and pedagogical contestations with the use of technologies. These are expressed as moments of contestation that, reflect academic culture.

Thus, an important finding from my research is that academic culture is not homogeneous rather it is changing in response to technological integration. There are places where academics submit to the use of technologies and places where they refuse to. Academic culture, while not embracing the instrumental perspective of the administrative vision, cannot stand completely outside of it. Although academics defend the boarders of academic culture, they also acknowledge that the integration of technologies makes them question the boundaries of academic culture. This indicates, I contend that academic culture is produced in the negotiation between established boundaries of academic culture and the various pressures to extend and change those boundaries.

This study reveals that academics do not express a romanticized notion of academic culture, but rather academic culture is characterized by a certain amount of fluidity and is in a state of flux. In fact, academics acknowledge, if indirectly, that culture

is produced in this fluidity and dynamism The relationship between academic culture and technologies is not just a clear matter of the technocrats versus the academics. In practice it is characterized by a productive mixture of acceptance and struggle.

The Contested Practices in Scholarship

As Ursula Franklin reminds us, technology's relation to society must be seen as practice, in terms of daily work routines and also in terms of the underlying thinking about technology (1990: 12). The advantage of looking at technology as practice is its direct link to culture, "because culture, after all, is a set of socially accepted practices and values" (1990:15). Formalized practices also "define the practitioners of a group of people who have something in common because of the way they are doing things" (Ibid.). In this context, technology is a system that includes machines, formalized practices, and specialized knowledge. Seeing technology as a system helps to see how the changed relationships can appear normal and inevitable, taken as given and not questioned (Franklin, 1990:13).

Articulated through the practices of instruction and research the analysis captures the perceived role that digital technologies are playing in the work of academics and suggests that the uses of technologies in higher education are replete with practices and discourses of contestation. As expressed by respondents, the challenge, not just for universities but for schooling, is to help people to be critical in the uses of the technology and to use them in ways that enhance their lives. Jessy highlights,

> biologists have talked about how evolution had lead homo sapiens to be incredibly adaptable and versatile in a range of environments but that this adaptability was an incremental thing so that we could adapt, but we could not deal with many adaptations quickly. So at

> some point, our biology is going to come up against our inventiveness and we're going to be faced with the fact that we cannot cope with the environment that we have created.

Being professors and students, Jessy indicates, means that "part of what we have to be doing is helping people learn how to reduce the amount if stimulation and be selective in those choices so that we don't overwhelm ourselves and society".

Contra suggestions that there is a cultural gap between computer using academics and non-computer using academics, my research challenges the existence of this gap, suggesting not only that many academics use a variety of computer technologies but that they all have moments of contestation when using them. Furthermore, the contestation is based on cultural practices and discourses that have significant social power implications for answering the question of what is the role of universities in the current context of increased diversification of education. This has implications for how we understand the intersection of culture, technology and the creation of knowledge.

In what follows, I summarize the use of technologies in the academic practices of scholarship and analyze these practices in terms of their relationship to academic culture. I begin with respondents' practices with technologies in teaching and learning, publishing and research, ascertaining the extent to which the technologies are being used in academic work, as well as the purposes of using the technologies. The description is followed by a summary of the analysis of the extent to which these practices are being contested, as well as the nature of the contestation as reflecting academic culture. The moments of contestation are analyzed primarily in terms of how they show the extent to which the use of technologies modifies the process of creating knowledge, placing significant pressures on academic culture.

In addition to varying from high to low levels, the contestation varies in nature. It is aesthetic, ideological and pedagogical directly relating to academic culture by having an impact on the process of creating knowledge. The levels and nature of the contestation are independent of the intensity of use, such that, those respondents typologized as heavy users have similar contestation moments and of a similar nature as those categorized as occasional users. Pedagogical contestation is an umbrella category defined in terms of practices that encompass both the aesthetic and ideological contestations, and is associated specifically with issues related to the perception of the extent to which using technologies enhances practices of instruction and research. Aesthetic contestation is defined in terms of the perceptions and experiences of using technological equipment in the context of face-to-face education. Ideological contestation is defined in terms of a particular use that reveals implications that have been obfuscated by promotional and institutional discourse. Ideologically, the contestations have to do with notions of professionalism and temporality.

The technologies analyzed here, as selected by respondents, are Microsoft Word for preparation of course content; PowerPoint for presentation of course content; and email, the Web and the Web CT server for communication of information and course content. The highest levels of contestation occur in the use of PowerPoint in the classroom for the presentation of course content, and the use of the WebCT server outside of the classroom for communication of course content. Moderate levels of contestation are associated with the uses of email for communication, and lower levels of contestation surface in the use of Microsoft Word processing for the preparation of course content.

Despite variation in terms of uses of specific technologies, for example all respondents use Word and email, and most do not use WebCT or PowerPoint, the use of *all* technologies is being contested to some degree. Surprisingly, the contestation is expressed most poignantly by those who are the early adopters and most intense users. Also surprising was the finding that there were no significant age, gender, or discipline differences in the types of uses.

The analysis indicates that the use of computer technologies in teaching and learning is being highly contested and participants' perceptions are that the technologies are being used almost exclusively for the transmission of information. The contestation in the use of Microsoft Word is ideological and aesthetic pertaining to issues of design. Ideologically the program is of limited design, which restricts choices rather than augmenting them. Aesthetically, despite utilitarian benefits (tracking and editing features: spelling, grammar) the use of technologies limits creativity with options that are pre-determined and pre-programmed.

Concerning the use of PowerPoint, although popular in conference and business presentations, it is being highly contested by professors and graduate students I interviewed, especially when used in classroom. Specifically, it is being contested for ideological and pedagogical reasons. The contestation is particularly high when the technology is used exclusively or intensely rather than sporadically or as a complement to the presentation of content. Ideologically, its use is perceived to impede classroom interaction between students and the professor, where most of the interaction is with the screen. This influences collegiality, and the perceived agency in maintaining the face-to-face or in-person interaction.

Additionally, heavy reliance of PowerPoint leads to an ideological contestation that is related to notions of professionalism in two ways. In one way, it is considered unprofessional by some academics to spend up to ten minutes at the beginning of class to set up the presentation, as well as the projection showing the personalized screen (with a personalized background picture for example, and showing the way files are organized) leading to a de-privatization of space or a loss of private space. Another way using PowerPoint is considered unprofessional is that, in most classrooms, the lights need to be dimmed giving the presentation the feeling of an entertainment show. The interface becomes the audience for both the professor and the student. This not only confounds the notions of education and entertainment, but it forces the interaction to occur between the screen and the students, rather than the professor and the students. That the interface is the audience raises issues about performance and performativity in teaching and learning, where the interaction between teacher and student during a class is considerably reduced or totally eliminated with an exclusive reliance on PowerPoint as the instructional strategy of choice. The struggle here is that traditional academic culture requires that interaction be between students and professors (and students among themselves), not between professors and the screen and students and the screen. This is also an aesthetic contestation revealing academic culture's simultaneous acknowledgement of, and unease with, notions of performance.

Pedagogically, the contestation has to do with the extent to which an exclusive reliance on PowerPoint is perceived to be detrimental to learning. The heavy or exclusive reliance on PowerPoint for the presentation of class content has important pedagogical implications leading to decreased note-taking in class. Particularly, students perceive that

the information on the screen is the only important information, ignoring the oral element of the presentation. The exclusive or heavy reliance on PPT contributes to the primacy of the written over the oral, carrying Innis' spatial bias to today's communication technologies. This lack of attention to the context in what is being said is exacerbated with the use of WebCT and making the slides available online, as mentioned below. When used exclusively or heavily, there is a tendency to overfill the slides with information, which indicates that temporality has shifted in such a way that it is possible to present a lot of information that is not matched by the time it takes to process that information. Compared to talking, the flow of the PowerPoint presentation is faster. Similarly, the pace of the presentation differs from the pace of talking, writing on the chalk board, or overhead projection, all congruent with allowing time to think about what is being said.

Undergraduate students tend to be the least contesting and find that using PowerPoint organizes information for them and they do not have to make decisions about what information is important. As part of the learning process, deciding on what notes to take can become significantly reduced. An important contestation was expressed by undergraduate students, however, who tend to feel pressured to use PowerPoint in their class presentations. When they decide not to use PowerPoint but present in a more traditional way, their presentation tends they feel not to be taken as seriously by colleagues. This leads to the erroneous perception of the primacy of the technological over the human, defining and measuring the quality of the presentation by the technologies used.

As the above summary indicates, there are important contestations being advanced by academics concerning the use of technologies for the preparation and presentation of course content. Similarly, as seen below, the use of technologies for the communication of course content outside the classroom is being highly contested. Concerning the use of email, WebCT and web pages, the lowest level of contestation is with the use of email and the highest with the use of WebCT.

Email is a useful technology, in that it serves as a memory device and offers increased possibilities for communication by shy students. At the same time, academics expressed interesting ideological concerns regarding its overuse. While the intermediality of email allows for a form of virtual collegiality for shy students, it does de-socialize the relationships between colleagues to the extent that some relations are maintained on a superficial or weak level. Professors and students underlined that the over use of email leads to less physical interaction between people in close proximity. Messages also tend to be economical, changing patterns of communication as well as collegiality. Additionally, an important pedagogical contestation surfaced in the expectation that students use email as the preferred mode of contact with professors. The assumption of email communication, combined with the possibility of reduced attention being paid to the oral elements of the presentation when a class is presented exclusively on PowerPoint, has lead to changes in the nature of the interaction in class. Specifically, this change is manifest in terms of creating or augmenting the perception by students that email can be a replacement for participating during class, reducing interaction. This pedagogical contestation is further exacerbated with the use of the WebCT server.

An ambiguous tension is evident in respondents' comments that, on the one hand,

acknowledge the benefits of email communication as speed of response and the possibility of communication with shy students, and on the other, underline an unspoken, yet prevalent, consequence of its overuse associated with structuring of their work influencing autonomy. The increased use of email communication and its convergence options leads to a perceived change in the structuring of academic work, to such an extent that there is the perception that academics are adopting a 24-7 model of work. The possibility of this restructuring has lead many professors to set up personal email policies, which, at a saturation point, could reduce the benefit of immediacy of email communication. Devising email policies represents an important contestation that indicates that while professors embrace the use of email they are noting that it is impinging changes in their work.

Although an academy wide mandated and adopted practice, the use of email is not a totally benign activity. It is subjected to considerable contestation. The contestation highlights the ways in which the use of technologies places pressures on traditional boundaries of academic culture, specifically those related to collegiality and autonomy of academics.

Concerning the WebCT server, my analysis indicates that its inception has been received with high levels of contestation both by professors and by graduate students, while students at the undergraduate level tend to be less contesting. WebCT is not as widely used as I was expecting from its fierce promotion during the interviews with some administrators at the Universities. It is used, largely, in undergraduate courses. Despite the various features of communication, according to my respondents, the most used

aspect of WebCT is the availability of course materials, such as the uploading of PowerPoint slides before or after the class.

Tellingly, the same arguments concerning the contested uses of PowerPoint and email can be expanded to include the use of the WebCT server and Web pages. The respondents' perceptions are that students are less likely to pay attention and actively interact during class when there is the expectation of email communication and when they can have access to the PowerPoint slides on the WebCT server. This, erroneously, equates communication of class content with electronic exchange of information, rather than with physical attendance of the class. More importantly, respondents' perceptions are that instead of freeing the student to focus on the classroom interaction, the availability of information on the WebCT server or on Web pages, combined with the uploading of the class PowerPoint slides, considerably reduces note taking during class as well as the students' agency in deciding what information merits note taking. If with PowerPoint they did not have to decide what notes to take, with the use of WebCT they do not have to take notes or go to class at all. Although some attempts are made to use the server for communication purposes, such as the "chat room" and the discussion forum, the perception is that professors revert to using the server primarily for transmitting information to students, thus privileging the instrumental uses of the technology.

The following paragraphs summarize the findings related to the contestation in publishing and research and reveal the nature of contestation as a reflection of tensions in academic culture, in both aesthetic and ideological terms. The use of technologies for publishing and research places pressures on traditional boundaries of academic culture and notions of scholarship.

According to respondents perceptions, the practice of online publishing, or the publishing of articles in electronic journals, has not become a legitimate aspect of scholarship. In addition, there seems to be an important and interesting withdrawal of interest in scholarly e-publishing. I posit that this is due, partly, to the tensions placed on academic culture. The patronage dynamics perceived by respondents define academic culture in terms of its gate keeping function. While there is a tendency to think of this function as an entirely positive element of academic culture, it must be acknowledged that this function establishes norms and makes distinctions. There is power implicated in these practices that establish hierarchies of publishing.

Some respondents consider the traditional hierarchy that has been established between scholarly journals and other ways to publish one of the most problematic aspects of the academy. There is the perception among those academics that I interviewed that, the most valued journals are controlled by small groups of people who refer to one another and who sit on the same committees while claiming neutrality. This contributes to what Foucault calls the establishment of a discursive formation that defines what is legitimate and what is not. An article that is read by three hundred subscribers is considered more valuable than one popularized article diffused in the press and read by ten thousand or one hundred thousand people. This is legitimation of symbolic power, which can be converted in material power. Technologies have improved the process of academic publishing in substantial ways, specifically in editorial, production and distribution purposes. At the same time, a residual perception remains that devalues publishing in e-journals as not exuding the same symbolic power as the academic practice of publishing in paper-based journals.

Regarding the contestations in research practices, this study indicates that while there is a wide praise for the database management systems and databases, academics are not conducting research, in practice what is occurring is that there is exchange of information via email and the searching for information online. The use of technologies is being contested ideologically for the changes it initiates in academic practices. The ease of access and the quantity of available information, combined with the features of copying and pasting, lead to a perception that information is 'free' and to a shift in what scholarship means, clearly placing pressures on academic culture. Other important changes include the loss of serendipity when the practice of searching library stacks is reduced. Professors are contesting the use of technologies to the extent that they do not recommend online journals as a practice to their students, and they also often do not accept online sources as legitimate references. As revealed in this thesis, the attempts at maintaining the established boundaries of academic culture with respect to publishing are contributing to the slow movement towards considering online publishing a legitimate practice of scholarship.

In addition to contestations that are associated with each technology and its use specifically in teaching and learning, publishing and research, there are some contestations that are common threads in academic practices and that reflect academic culture. Ideologically, respondents' perceptions are that the use of the technologies examined in this research have the potential to considerably reduce the personal interaction among academics and hence collegiality. This reduction has important pedagogical corollaries. Furthermore, the notion that the machines are smart, and that utility and creativity can be achieved thru these machines undermines academic culture.

Finally, the issue of temporality is interesting; contrasting with the notion of labor-saving technologies. Respondents highlighted the ways in which the use of technologies increases the time it takes to prepare course materials, to upload the slides, to fill out forms on the Web that previously where done by secretaries, and to learn the software. These new practices add to professors' workloads.

Aesthetically, all technologies examined in this study are perceived by the respondents to have pre-determined design options that limit creativity and variety. This suggests that there is an established aesthetic element or an awareness of its vulnerability within academic culture.

Pedagogically, the analysis suggests that there is a perception that the use of the technologies might in some cases be detrimental to scholarship. The contestation is related to the ways in which conceptions of communication and education are reduced to transmission of information placing significant constraints on academic culture whose idea is more constructivist and interactive.

The Discourse of Contestation and Academic Culture

The practices of contestation in the creation of knowledge, articulated through the practices of teaching, learning, publishing and research, are framed by an academic and an institutional discourse where the former is a critique of the latter. Despite a language of learner-centered, marketable skills, open and life-long learning, central to the institutional discourse, governmental and institutional policies and initiatives substantively advocate a commercial approach to higher education, being driven primarily by economic and political, rather than educational mandates. More importantly,

the mandated uses of technologies disturbs academic culture precipitating what is seen to be an undesirable process of institutionalization of pedagogy that involves the corporatization of education, the centralization of decision making, and the homogenization of academic practices. This process places significant pressures on academic culture, as corporatization means that professors' and students' interests are bound with market interests. This can undermine the creation of knowledge they suggest. Furthermore, there is, to a great degree, a perceived erasure of agency with the centralization of decision-making concerning technologies. Finally, homogenization leads to a high degree of uniformity of academic practices my participants suggested.

The perception is that the institutionalization of pedagogy undermines the notion of academic freedom at the foundation of academic culture and confirms a definition of knowledge as transmission of data and electronic reproduction. The academic discourse is highly critical of this process of institutionalization. This criticism is based on the role of academics in integrating technologies in their own work, and in the roles of technologies in the production of knowledge. Concerning the role of academics, respondents perceive that they lack agency in policy input, in the degree of choice in using certain technologies, and in the institutional support provided for the use of the technologies. Similarly, the role of technologies in the creation of knowledge is perceived to be facilitative and the creation of knowledge is a creative rather than a transmission process.

Framing the integration of technologies in higher education in terms of the academic discourse, as a critique of the institutional discourse, underlines the power relations at play explored in the concepts of normalization and freedom. While there is a

seemingly prevailing power relation towards the institutional discourse with the erasure of academic agency, this erasure is always only partial. The policies and initiatives are normalizing practices, that is, they make the use of technologies appear normal and a natural progression of higher education, as well as perpetuating a predisposition to using technologies. Despite that, academics exert a freedom of practices and discourse that constantly challenges and questions the relations of power. Power is conceptualized not as coercive or imposing, but as dynamic and dispersed in technologies of the self. As techniques of the self, academics willingly adopt many technologies, such that they are not being imposed on them. At the same time that they are accepting certain uses of technologies, they are also acknowledging the pressures that adopting them places on academic culture.

Following the above summary of the practices and discourses conceptualized as contesting the use of technologies, I contend that this contestation is related to academic culture. I conclude that the use of technologies simultaneously reaffirms and questions the existing boundaries of academic culture, defined primarily in terms of the intrinsic characteristics of knowledge production, rather than in terms of an extrinsic response to innovation. Academic culture transcends discipline and institutional boundaries. Based on respondents' comments, the cultural assumptions that form the basis of the technological practices and discourses of contestation are: the philosophy of teaching and conception of learning; the role of higher education; the role of academics; the conception of knowledge; and academic communities.

In terms of the conceptions of teaching and learning, academics' views of teaching as facilitating student learning and conceptual growth precludes, to some extent,

the use of technologies. This is all the more interesting because the impetus for technological integration in university education is that it allows for 'learner-centered' models of teaching and learning.

Concerning the role of higher education, respondents point out that higher education serves multiple roles: a philosophical or intellectual role, a practical or vocational role, a socialization role, a creative role, and a 'greater good' or conscience of society role. Although individual institutions vary in which roles they emphasize, both McGill University and Université de Montréal have assumed all of these roles. It is the respondents' perception that implicated in these roles is the necessity of human interaction in developing critical thinkers, citizens, and in pursuing knowledge. None of the roles identified by respondents inherently precipitates the use of any specific technologies. However, the integration of technologies shapes them. Technologies are indispensably ancillary in fulfilling the various roles of higher education suggest respondents. At the same time, the use of technologies generates new roles that are not directly related to traditional academic work.

Regarding the role of the academic, they are middle managers, bureaucrats, accountants, teachers, supervisors, creators of knowledge and they have a public role as intellectuals. These have been grouped into three main roles: teaching and learning, research and administrative. To achieve a balance within these roles is a continual struggle for academic culture, and this struggle is perceived to be exceedingly difficult with the integration of technologies in academic work. The roles of academics – to teach (be a guide and supervisor), to be a researcher (produce knowledge) and to be an administrator – are independent of technological integration. More importantly, the roles

of guiding student learning and creating knowledge maintain and reproduce academic culture. I contend that, this suggests that the significance of these roles increases proportionately to the increase in technological implementation. The perceived institutionalization of scholarship is being balanced by the contesting force of academic culture.

In articulating their conception of knowledge, academics' views are expressed in constructivist terms. Professors define knowledge in terms of the activity of learning, not as something possessed. Instead of a product, knowledge is a set of practices that are socially constructed and influenced by specific contexts. Knowledge for them is about meaning and power in relation to those who create, understand and use it. Academics advocate a socially constructivist approach to knowledge. This approach contrasts markedly with the corporate centered approach of the 'knowledge society', where knowledge is equated with access, transmission and exchange of information. A conception of knowledge as constructivist characterizes academic culture.

Finally, regarding academic communities, these are defined as academics' perceived level of integration into the various facets of academic life. The integration varies by the level of belonging, which in descending order is: the departmental community, the research community including graduate students; the disciplinary community; the intellectual community; and the institution. The perceived level of integration is significant to the extent that it is a reflection of academic culture. Academics' sense of belonging to a particular community determines, partly, their decisions related to technologies. Surprisingly, academics identify least with their institution. Despite being unexpected, this is coherent with the academic discourse of

contestation of policies and initiatives that are perceived to be mandating the use of technologies in the creation of knowledge.

Contrary to the notion of technological integration because of competitiveness, according to my respondents, the value of the institution was not based on the level of technological sophistication. While technologies can be used for virtual connections, the sense of belonging that academics perceive is completely independent of the technologies they use.

Based on a view of teaching and learning as guidance and conceptual growth, a view of knowledge as constructivist, the role of the teacher as a guide, and the role of higher education as the formation of intellectuals and citizens, the analysis in this study suggests that academics perceive that technological integration in university education decreases intellectual capital. The use of technologies for minutiae and ancillary aspects of scholarship legitimizes academic culture and increases its symbolic and cultural capital. In other words, the practices and discourse of contestation increase the symbolic and cultural capital of academics.

My research, based on respondents' perception of technological integration in their everyday practices of instruction and research, suggests not a diminished relevance of face-to-face education, but conversely, a renewed importance of face-to-face education and academic culture in the creation of knowledge. Although technological integration is undoubtedly leading to a diversification of education, this diversification, in turn, leads to a simultaneous and parallel strengthening of conventional university education.

Conclusion

I finish writing this dissertation on my laptop that has embedded within it the latest software, which I am using to process my words and correct my work. Throughout conducting this research there were instances where I used the Internet and Web sites to search for articles and information required for my analysis. To recruit participants, the initial contact was through departmental email lists. It might have been impossible to do this study without the use of technologies.

At the same time, the vast majority of my interviews were conducted in person, with only a few participants opting for the use of email to respond to the interview guide. The personalized, conversational and dynamic nature of the interviews leads me to posit that it would be difficult to replicate the data if it had been mediated by the computer. I also transcribed the interviews by listening to the micro-tapes and writing them with a pencil in my note books, only subsequently typing them on the computer. At different stages of research and writing, I have also been indebted to the fruitful face-to-face discussions with colleagues, friends and family about various aspects of this study. In the final stages of writing, I have acquired the services of an editor who uses a pencil and writes comments on the margins of the paper. The spell check available with the word processing software is of limited use in this regard. It would have been equally impossible to do this dissertation without this personal interaction.

From the sophists to the Gutenberg press and the later emergence of audio visual and computer technologies, higher education has arguably undergone important transformations. Yet, in fundamental ways the creation of knowledge has remained significantly the same throughout each technological era. It is my contention that this is

both the result of and a contributor to academic culture.

Technological developments have historically created both possibilities and limitations for university education, and the increased use of computer based processors and Web servers has been accompanied with moments of uncertainty and struggle that reflect aspects of academic culture. The virtues of the technological ethos emphasize a process of producing knowledge that can be turned into profit. To accept technological forces as our 'true' destiny is a reductionist view of communication and education, being merely a particular model of a global economy. This research, although not methodologically generalizable, indicates that answers to the questions of what are the valid purposes of education and academic culture can be found in the symbolic and cultural capital of education and academia. The tensions between communication technologies' potential to be equalizing and liberating and to extend existing inequalities and repressions apply to all communication eras. According to respondents, technologies tend to be more appropriate for transmissionist than for constructivist models of knowledge creation and education. My research suggests that a critical approach to the uses of new technologies in practices of instruction and research is part of academic culture that values autonomy, academic freedom and intellectual identity.

Although the integration of technology clearly changes practices, which became technologically mediated, leading to a greater diversification of education, this does not change the nature and purpose of conventional face-to-face education. On the contrary, as technological integration necessarily diversifies education, it also leads to the parallel realization of the imperative relevance and importance of the physical university and the role of traditional university education. The diverse forms of technologically blended

education, simultaneously maintain and strengthen, not place into question or reduce the role of university education as distinctively and purposefully departing from other forms of education. This, in turn accentuates a renewed importance of academic culture emphasizing education as part of the process of creating knowledge, and as an alternative to a continuing trend towards corporate monopolization.

Although not diminishing the significance of above findings, there are important limitations in this study. While there are other influences on academic culture, such as aging professionals, increased access to post-secondary education, and many others, I am looking only at technologies. A limitation of this research is that it studies only two universities, both research oriented institutions. An extension of research into other universities that are predominantly teaching institutions and other higher education institutions would add considerably to the vigor of my conceptualization of academic culture. Additionally, while this study found no differences in terms of language, such that both French and English universities conceptualized culture in similar ways, an internationalization of this research to different languages would further confirm or challenge this finding. Finally, although ranging from the humanities to the physical sciences, my study focuses only on four disciplines. Further research into a wider range of disciplines would considerably add to the robustness of academic culture.

These limitations suggest that a national study of academic culture in all Canadian universities would be a welcome addition to the existing research. The various suggestions that came out of this exploration into the relation between academic culture and technologies are worth investigating further. The fact that academics are struggling with using technologies warrants, in itself, further study.

In addition to the conclusions concerning the relationship between academic culture and technologies, there are some interesting findings that shed considerable insight into the terrain of academic culture. From this project we learn about the dynamics of academic culture and the changing nature of the "ivory tower" academic system. Academic culture is a site of contestation where certain norms and values are being worked out in the complexities with the institution. An interesting revelation is in relation to graduate education where the norms of academia require conventional interaction to be transmitted. The cases where technologies are used, a potential for change is created, possibly weakening the bonds of traditional academic culture.

It was equally interesting to find that loyalty to the institution is not as high as expected. Academic culture is not the same as institutional culture. Academic culture is mapped out along different boundaries than institutionally delineated. Its cartography is delineated with collegial, symbolic, and intellectual bonds.

Despite the exploratory nature of this study, drawing on a small sample at only two universities, not being possible to speak beyond that with authority, some initial and intriguing implications for practices of instruction and research have emerged. Providing a snapshot of academics and their perceptions and practices, the struggles and contestations raise issues with significant implications that are of interest to educators, students and administrators alike, and anyone who is implementing new technologies in their regular practices. The culture and the *habitus* of the environment will highly influence the views on, and ultimate adoption of the technologies. At the same time, culture itself is susceptible to change with each technological development. Here I explored some of the ways this dynamic relation is perceived by academics.

The last decade has witnessed the development of impressive communication and information technology portfolios in many university education institutions. I have examined in this thesis, the relationship between this development and academic culture at this conjunctural time. Academics' perceptions are revealing as they discuss the role of technologies in altering their work practices and institutional roles, as well as their conception of themselves. Within a climate of 'globalization' the perception of struggles in using technologies in the creation of knowledge is itself is a significant revelation. An important implication from this work is that this articulation of perceived pressures and contestations is itself worthy of further study. This is a time when the aggressive implementation of technologies is being faced with equally aggressive contestations that, in subtler ways, would unquestionably ease both Huxley's and Innis' preoccupation with the demise of Western civilization. The tower is not under siege and neither are universities for sale.

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Appendix I
Request for Participation

My name is Maria José and I am currently doing a Ph.D. dissertation exploring issues involved in the integration of new communications technologies in education. Particularly, I am interested in professors' and students' reasons for choosing to use certain technologies in their teaching, learning and publishing and their perceptions and opinions on how the technologies affect higher education and academic culture.

For this purpose I am looking for individuals to interview face to face (or alternatively via email), if you are interested please email me at maria.j.ferreira@mail.mcgill.ca I sincerely appreciate your participation without which this study and therefore my doctoral degree would not be possible. I am looking forward to your reply. Thank you very much for your time.

Thank you for your understanding and co-operation.

Appendix II
Interview Guide (professors)

Sex

M ( )

F ( )

DOB_____

Academic Status (Prof.)

Assistant Prof. ( )

Associate Prof ( )

Professor ( )

Other, specify _____

Faculty_____

Department_____

Current Administrative Functions

Current Committees

Courses currently teaching

List # and place of publications (or indicate a web site where these can be found).

List the # and kind of research grants you have received within the last ten years (or indicate where these can be found).

List the # and kind of academic awards you have received within the last ten years (or indicate web site where these can be found).

How would you divide your academic work: teaching____% research_____% administrative functions____%

Send above by email

For face-to-face interview

The following questions are divided into three main clusters: teaching and learning, publishing, and academic culture. The subdivisions are primarily my own notes to situate the research.

Warm up

1. **When did you start using computers?**
2. **For what purpose?**
3. **When did you start using them for work?**

Teaching

4. **What technologies do you use in your teaching? Purpose (course management, instruction, communication)**
5. **What new technology are you using?**
6. **Do you use Web CT? For what purposes?**
7. **What are the major advantages of the technological innovations you have adopted?**

Pedagogical value

8. **In addition to those what is its pedagogical value? (elicit elaboration on this)**
9. **What are your major concerns regarding the technological innovations you have adopted?**
10. **What do you think are the forces driving the implementation of new technologies in higher education institutions?**
11. **What do you see as the most significant technological trends in higher education?**

12. In your opinion, what is the role of computer mediated technology in education?

13. The University is considering the introduction of a policy of using laptop computers for students, how does this make you feel?

14. In the 2002-2003 academic year professors will be required to put course material on Web CT, such as the course outline and syllabus. How does this make you feel?

15. In the 2002-2003 academic year professors will be required to submit grades through Web CT. How does this make you feel?

16. What is your opinion on the construction of the new Information technology building?

17. The intelligent classroom?

Knowledge

18. What is your philosophy of teaching?

19. In your opinion, what is the role of higher education?

20. In your opinion what is the nature of knowledge?

21. In your opinion what is the role of the University?

22. What is your role as a professor?

23. What do you expect from your students? (learning goals)

24. Identify the most important reasons why you are a professor.

25. Describe the most significant changes in terms of your teaching during your career.

Publishing

26. Which do you consider the top three publishing outlets in your field. Why?

27. Have you published online?

28. What did you like about it?

29. Do you read online journals?

30. Do you recommend online journals to your students?

31. Does using Web CT make you publish more?

32. What is the status of online publishing for you?

33. How do you feel if your students use online journals or sources in their citations and research?

Academic culture

34. Do you feel you are part of a bigger thing at your institution, which you might call academic culture? Elaborate. How would you define it?

General

35. If you could tell me one more thing that you feel was not covered thus far about the integration of technology in higher education what would it be?

Appendix III
Interview Guide (students)

Sex

M ( )

F ( )

DOB_____

Academic Status (students)

Year of program 1, 2, 3, 4,

Other, specify _____

Part-time ( )

Full-time ( )

Faculty_____

Department_____

Teaching and Learning

1. **What do you use the computer for in your education?**
2. **Are you currently taking or have you taken any courses that include a Web component? (such as using Web CT, or similar platforms)**
3. **If yes what courses?**
4. **What was/is the new technology used for? Or what does your professor want you to use Web CT for?**
5. **If yes what did you think of the experience?**
6. **What are the main advantages? Disadvantages?**
7. **If the university was to introduce a policy of using laptop computers for students, how would this make you feel? (Do you feel pressured, etc..)**
8. **Do you feel pressured to use new communications technology? How?**

9. **What is your opinion on the construction of the new Information Technology building?**
10. **The intelligent classroom?**
11. **What is the level of computer infrastructure you expected?**
12. **Describe the most significant changes in terms of your learning during your career?**
13. **What are the major advantages of the technological innovations you have adopted?**
14. **What are the technological innovations that lead to the most learning for you?**
15. **What are your major concerns regarding the technological innovations you have adopted?**
16. **What do you think are the forces driving the implementation of new technologies in higher education institutions?**
17. **What do you see as the most significant technological trends in higher education?**
18. **To what extent do you support the use of new technologies as methods of instruction delivery?**
19. **As your professors used new technology, such as Web CT did it make you learn? (did it enhance learning?) Why? What was the technology used for?**
20. **Was the professor comfortable with the technology?**
21. **Did you understand why the technology was being used?**

Knowledge

22. **What is your view of knowledge? (what do you think knowledge is?)**
23. **What is the prevailing view of knowledge represented in your professors' teaching?**
24. **What is your conception of learning? (what is the meaning of learning)**
25. **What is your learning style? (how do you learn best?)**
26. **In your opinion what is the role of higher education?**
27. **In your opinion what is the role of the professor?**

Publishing

28. Do you read online journals? On your own or as required by your professor(s)?

29. How do you like them?

30. What do you see as the status of online journals? (legitimate scholarship?), Why?

31. Have you published online? If so which journal (s)?

Academic culture

32. Do you feel that you are part of something you would call academic culture? How would you define it? (how do you know that you are part of it?)

General

33. If you could tell me one thing about the integration of technology in higher education that has not been covered, what would it be?

Interview guide (selected people)

CIO
CJC editor and CJSA
Educational Technologist Consultant
Web CT support staff

1. **What levels of resistance are you finding in the professors and students?**
2. **What are the main issues that you have to deal with?**
3. **Statistical information**

Appendix IV
McGill University
Consent Form

Research Project Title: **Information Seeking Education: Communication Technologies and Academic Culture**
Investigator: **Maria José M. Ferreira**
Email: maria.j.ferreira@mail.mcgill.ca
Department: **Art History and Communication Studies, Graduate Program in Communications, McGill University**

This consent form, a copy of which has been given to you, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more details about something mentioned here, or information not included here, please ask. Please take the time to read this carefully and to understand any accompanying information.

The purpose of my research project is to explore issues involved in integrating new communications technologies in higher education. Specifically, I am interested in people's reasons for choosing to use some technologies while not others in teaching, learning, and publishing. In addition, I want to investigate the broader theme of academic culture. Here the objective is to ascertain the relations between communications technology and different types of academic cultures.

You are being asked for an interview because you are either a professor or a student at a university in Montréal. You were selected from academic lists and the telephone directories at the universities. This interview is expected to take approximately one hour. It will consist of some specific questions, but feel free to elaborate on any point of interest to you. You should be aware that answers to some questions may be considered personal, requiring you to reflect and talk about your own sense of identity and culture. You may decline to answer at any time.

In my thesis I will not use the real life names of the individuals involved, rather I will use pseudonyms. Confidentiality and anonymity will always be maintained. However, you will be quoted, and some quotations could identify you to some of the readers of either the thesis or subsequent publication using the interview data.

My supervisor and I will be the only people with access to any data from the interviews, either in taped or transcribed form, except as it appears in the final draft of the thesis. The data will be stored be kept in a secure location for two years after completion of the thesis. Once completed a short executive summary of the data and conclusions will be available online or circulated upon request. A copy of the results of my project will be available to all interviewees on request.

McGill University
Consent Form

Research Project Title: **Information Seeking Education: Communications Technology and Academic Culture**
Investigator: **Maria José M. Ferreira**
Email: maria.j.ferreira@mail.mcgill.ca
Department: **Art History and Communication Studies,**
Graduate Program in Communications, McGill University

This consent form, a copy of which has been given to you, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more details about something mentioned here, or information not included here, please ask. Please take the time to read this carefully and to understand any accompanying information.

The purpose of my research project is to explore issues involved in integrating new communications technologies in higher education. Specifically, I am interested in people's reasons for choosing to use some technologies while not others in teaching, learning, and publishing. In addition, I want to investigate the broader theme of academic culture. Here the objective is to ascertain the relations between communications technology and different types of academic cultures.

You are being asked for an interview because you are involved in either acquiring, implementing or supporting administratively the use of new technology in teaching, learning or publishing. You were selected from academic lists and the telephone directories at the universities. This interview is expected to take approximately one hour. It will consist of some specific questions, but feel free to elaborate on any point of interest to you. You should be aware that answers to some questions may be considered personal, requiring you to reflect and talk about your own sense of identity and culture. You may decline to answer at any time.

In my thesis I will not use the real life names of the individuals involved, rather I will use pseudonyms. Confidentiality and anonymity will always be maintained. However, you will be quoted, and some quotations could identify you to some of the readers of either the thesis or subsequent publication using the interview data.

My supervisor and I will be the only people with access to any data from the interviews, either in taped or transcribed form, except as it appears in the final draft of the thesis. The data will be stored be kept in a secure location for two years after completion of the thesis. Once completed a short executive summary of the data and conclusions will be available online or circulated upon request. A copy of the results of my project will be available to all interviewees on request.